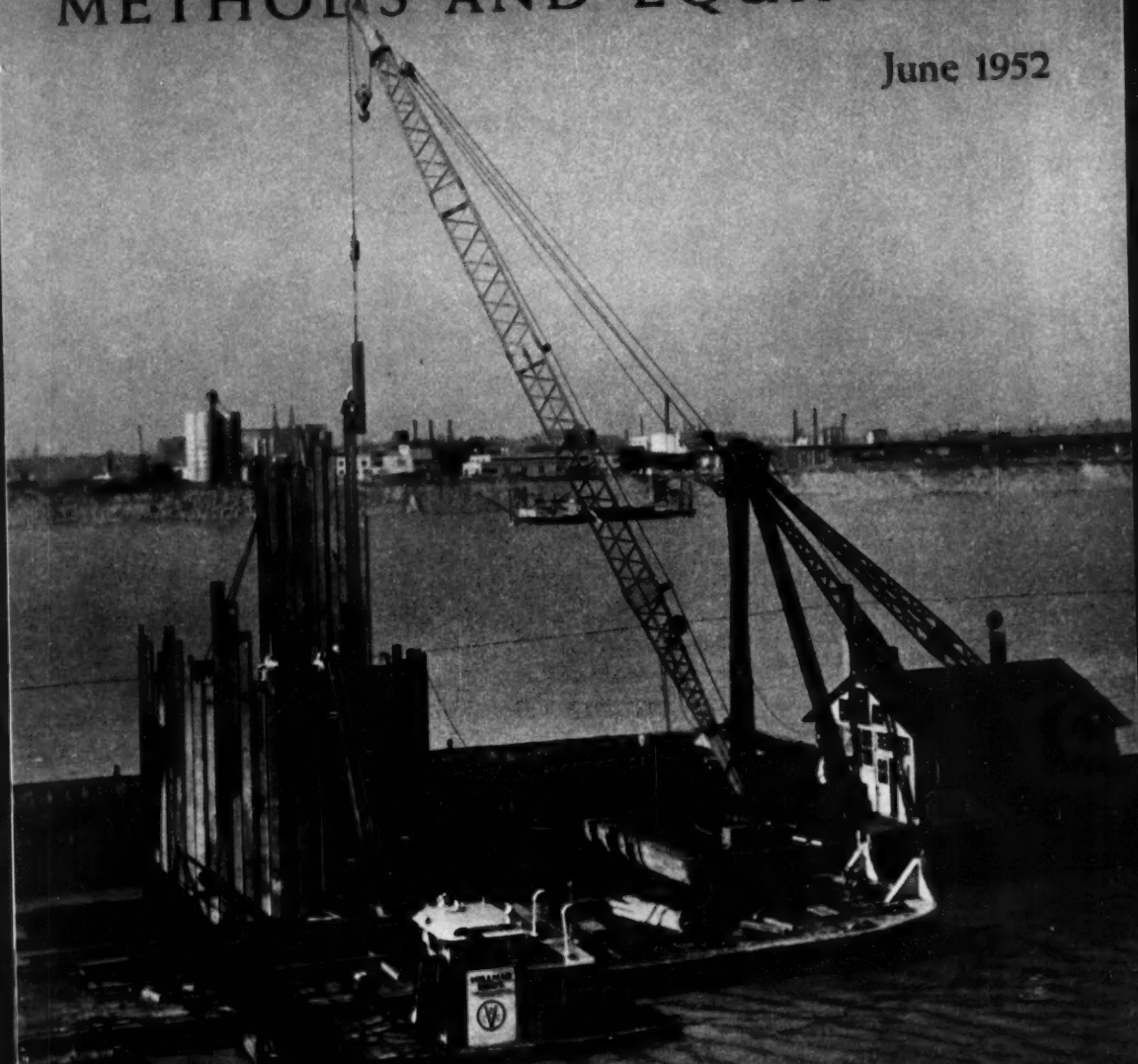
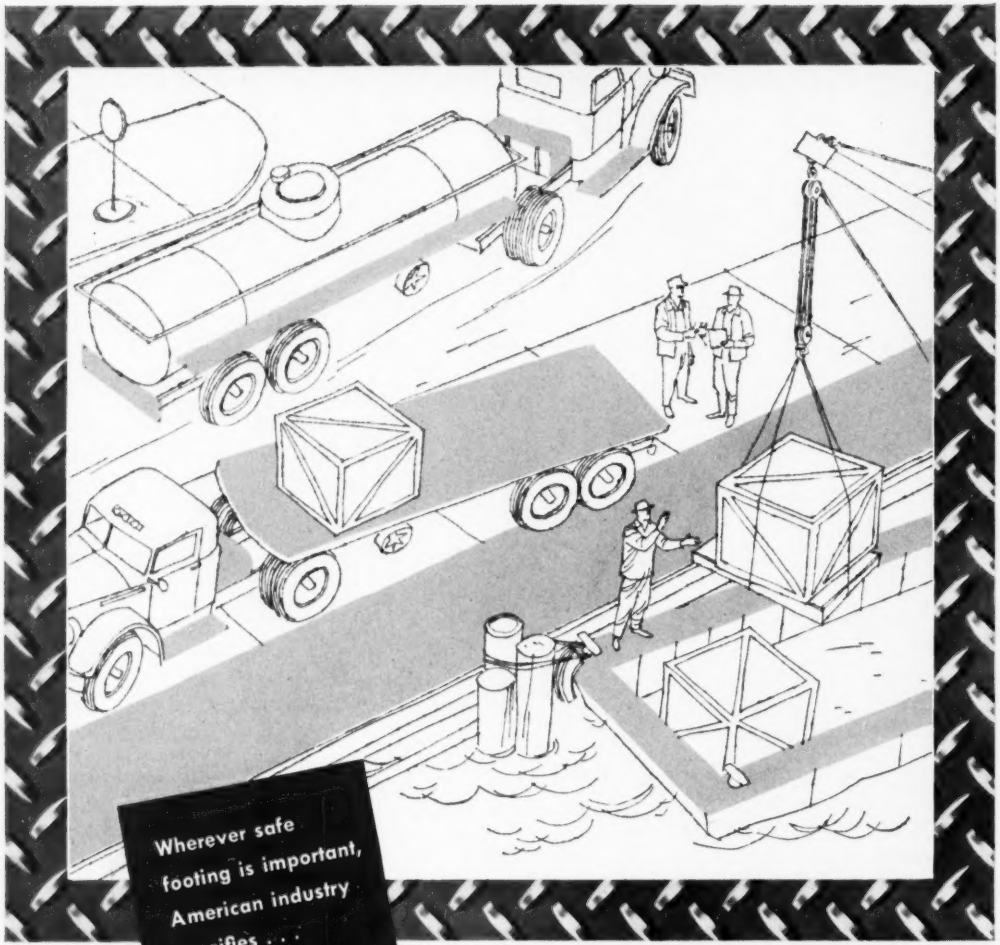
35 CENTS

CONSTRUCTION

METHODS AND EQUIPMENT

June 1952





INLAND 4®-WAY SAFETY PLATE

Because ACCIDENTS are COSTLY, safe, sure footing pays off in higher production, better fire protection and lower insurance rates.

Men "on the move" appreciate the non-skid, slip-resistant qualities of Inland 4-Way Safety Plate. They work faster and more efficiently; morale is generally higher.

The long-lasting qualities of Inland 4-Way Safety Plate means lower maintenance and replacement costs —fewer repairs.

You'll be wise to use Inland 4-Way Safety Plate on all danger spots in your plant and as standard equipment for your products. It's a worthwhile investment any way you look at it.

Available from Leading Steel Jobbers

•

WRITE FOR BULLETIN F-1

INLAND STEEL COMPANY

38 SOUTH DEARBORN STREET • CHICAGO 3, ILLINOIS

SALES OFFICES: *Chicago • Davenport • Detroit • Indianapolis • Kansas City • Milwaukee • New York St. Louis • St. Paul*

PRODUCTS: *Sheets, Strip, Tin Mill Products, Bars, Plates, Structural Shapes, Sheet Piling, Reinforcing Bars, Pig Iron, Rails and Track Accessories*

INLAND

RESEARCH KEEPS **B.F.Goodrich** FIRST IN RUBBER

B. F. Goodrich steel cable belt

for longer, higher, single-flight conveyors

THAT iron ore mine is so deep a 30-story building could be built in it and the roof wouldn't reach the surface. The problem of getting ore from the bottom of the mine up to railroad cars was solved when a B. F. Goodrich steel cable belt was installed. That was 4 years ago, and the steel cable belt has been at work ever since, lifting 1,000 tons of ore an hour, over a third of a mile up and out of the mine. The belt is still in perfect condition, good for years' more service. Here's why the B. F. Goodrich steel cable construction can make conveyor belts of lengths and lifts far exceeding anything formerly possible:

Strength for long hauls — In this exclusive B. F. Goodrich belt design, individual steel cables run lengthwise, each completely surrounded by rubber. These parallel cables add tremendous strength, yet are flexible so that troughing is natural, belt keeps centered on idlers, spillage is held to a minimum.

Strength for long life — Two plies of nylon and cotton fabric, placed across belt width, act as a shock absorber, permit belt to "give" crosswise when impact occurs, prevent longitudinal tearing.

Single-flight economy—Steel cable construction now makes possible a single-flight conveyor for installations where a combination of high lifts and long distances exists. It eliminates the transfer points necessary with a conveyor system built in several stages with ordinary belts.

The B. F. Goodrich steel cable belt was especially designed for the efficient handling of material under the severest conditions — high lifts, long centers, heavy impact. Your local BFG distributor can give you additional information, or write *The B. F. Goodrich Company, Industrial & General Products Division, Akron, Ohio.* (Available in Canada)

Conveyor Belts BY
B.F.Goodrich
RUBBER FOR INDUSTRY

a STRAIT-LINE is Your Shortest

Digs in Rear or– Digs in Front

Push-Tilt assures fuller buckets even in fine plaster sand.

An Oliver Industrial Wheel Tractor and Straight-Line Loader is the biggest profit asset for any loading operation. It digs in back . . . or digs in front . . . *and loads in front.* No time-wasting turning or backing required.

But here is its Biggest Advantage . . . ADDED TRACTION FROM REAR-CARRIED BUCKET

Here's proof. These photos were taken loading out *plaster sand,* so fine it squirted out through a ten-penny nail hole in the truck body in a stream 4 inches long. Despite this difficult going, the tractor and Strait-Line wheeled its bucket loads upgrade without spinning. It ran back from truck to bank with force. This extra traction for difficult conditions is created by the rear carried bucket.

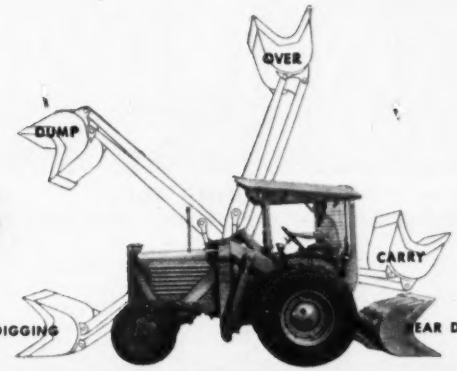
This is a condition where rear digging solved the problem. In fact, under most conditions, the operator can do *more* with rear digging.

Why not check the Oliver Industrial Wheel Tractor Strait-Line for your loading. It's sold exclusively through Oliver Industrial Distributors. See or call yours.

THE OLIVER CORPORATION

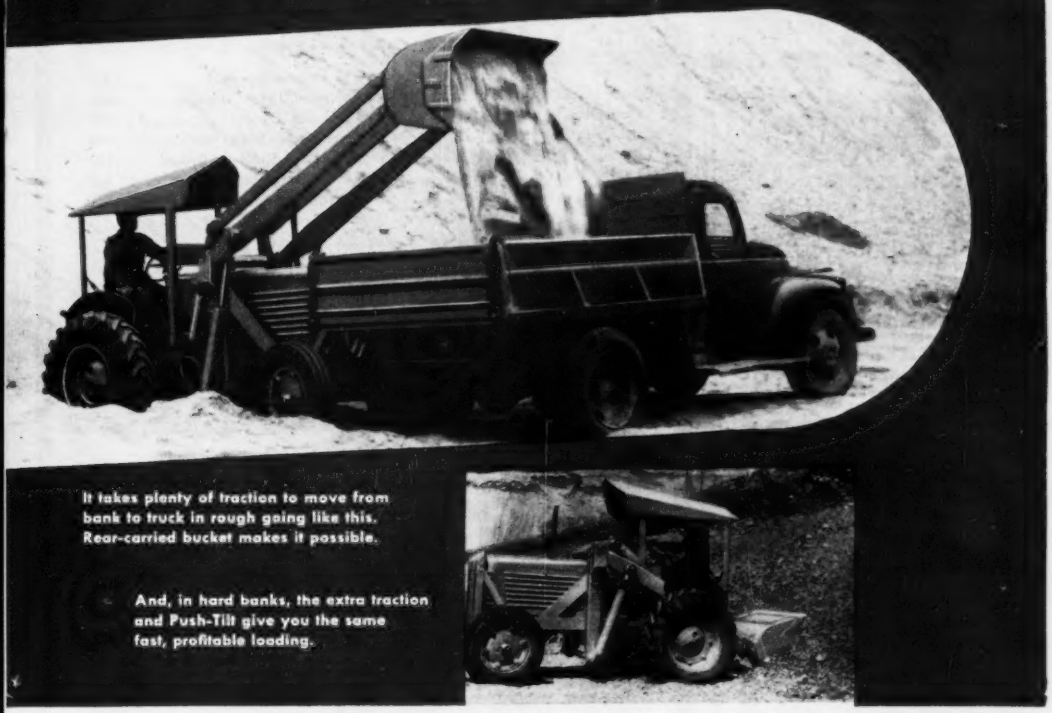
Industrial Division: 19300 Euclid Avenue, Cleveland 17, Ohio

A complete line of Industrial Wheel and Crawler Tractors



path to Profits!

AND, IT MULTIPLIES TRACTION—SAVES TURNING—MAKES STEERING EASIER—INCREASES STABILITY



It takes plenty of traction to move from bank to truck in rough going like this. Rear-carried bucket makes it possible.

And, in hard banks, the extra traction and Push-Tilt give you the same fast, profitable loading.

Your choice of COLOR

IN HARD BOILED* Safety Hats

STRONGER-THAN-STEEL FIBERGLAS

crowns offer unlimited choice of vivid, permanent colors... with color molded all the way thru the safest crowns ever built. Shock-resisting ribbed design also available in aircraft grade aluminum.

Write for Full Color Circular

SAVE MONEY . . . save time! One size fits all heads . . . reduces inventories. Fully adjustable headband and hammock; can be changed in SIX seconds. Self-shaping and air-cushioned for comfort.

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Distributors in principal cities

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275 EIGHTH STREET, SAN FRANCISCO, CALIFORNIA

CONSTRUCTION METHODS AND EQUIPMENT

Volume 34, Number 6 **JUNE 1952** Established 1919

Pay Dirt in This Issue

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Sections of rigid frame structure are prefabricated at site by down-hand welding on crane-handled jigs

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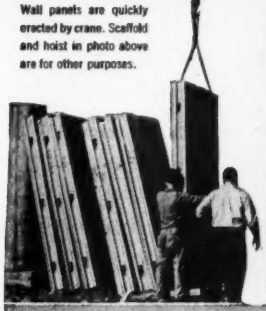
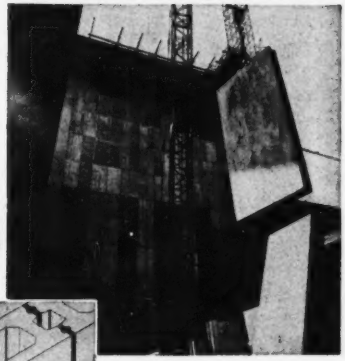
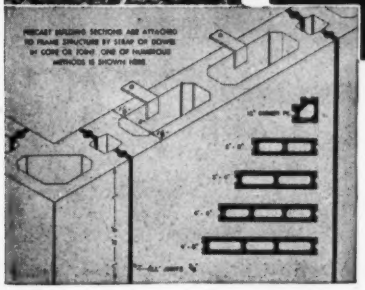
TOMORROW'S WALL *Today!*

48 Sq. Ft. of Finished Wall Erected in 8 Minutes



Wall panels are quickly erected by crane. Scaffold and hoist in photo above are for other purposes.





JERSEY CENTRAL POWER & LIGHT CO.
Power House Addition
South Amboy, N.J.

Engineers and General Contractor:
BURNS & ROE, INC., New York

Wall Panels Manufactured and Installed by:
PRECAST BUILDING SECTIONS, INC.
21 East 40th Street
New York 16, N.Y.

● Consider the advantages of precast wall panels: A complete wall system, quickly erected, in story-high sections . . . insulating, fire-safe . . . joints equal in strength and watertightness to the panels themselves . . . a wall requiring no finish.

Precast Building Sections were used for 8,000 sq. ft. of wall, for this 140-ft.-high Power-House addition . . . an all-purpose, one operation wall system . . . each 48-sq.-ft. panel lifted into place in 8 minutes . . . a finished wall as attractive as high quality cut stone.

Panels are produced in a range of sizes, for flexibility in architectural treatment and economy in construction. Lightweight aggregate, hollow-core design, and strong, dense concrete assure high insulating value and utmost fire-safety. Walls erected in 1912 are in first-class condition today.

Units are mass-produced by assembly-line methods, under rigid quality control. Air-entrained 'INCOR'* 24-HOUR CEMENT concrete is used: (1) extra plasticity expedites filling of 1½" space in heavy steel forms; (2) dependable high early strength permits stripping after initial 40 minutes' high-temperature curing . . . 6 to 8 daily uses of each form.

Tomorrow's wall today . . . shop-produced, flexible, ready-to-assemble . . . uniform, attractive appearance . . . result of engineering imagination and production know-how, with an assist from America's FIRST high-early-strength portland cement. *Reg. U. S. Pat. Off.

LONE STAR CEMENTS COVER THE ENTIRE CONSTRUCTION FIELD

LONE STAR CEMENT CORPORATION

Offices: ABILENE, TEX. • ALBANY, N. Y. • BETHLEHEM, PA. • BIRMINGHAM
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LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 17 MODERN MILLS, 125,600,000 SACKS ANNUAL CAPACITY

Motorola 2-Way Radio

speeds Construction Operations

Construction superintendent directs and coordinates operations over the Motorola 2-way radio—talking *right* now, and regardless of location, to working crews located at remote points of your operation.

The figures are convincing.

Your operations too can beat former production records with Motorola 2-way radio—saving time, costs, outage and dead mileage—keeping your production lines in gear from excavation to final clean-up.

You're right the first time with Motorola.

It costs less to install and maintain, year after year, than all others.

With eight leading developments, years ahead of the field, including the famous "Sensicon" sealed selectivity, your investment is safe from obsolescence.

So be ahead and stay ahead with Motorola.

Remember there are twice as many Motorolas in service as all others combined—with *the reason* built into every one.

Experience Counts! OVER 22 YEARS OF LEADERSHIP IN MOBILE RADIO!

It costs you nothing to find out—from a qualified Motorola engineer. Don't delay! Wire, phone or write for immediate and generous information.

Driver reporting position of his truck and status of work from distant operations point, receives orders from the control dispatcher saves hours and miles of wear, risk, and fuel.

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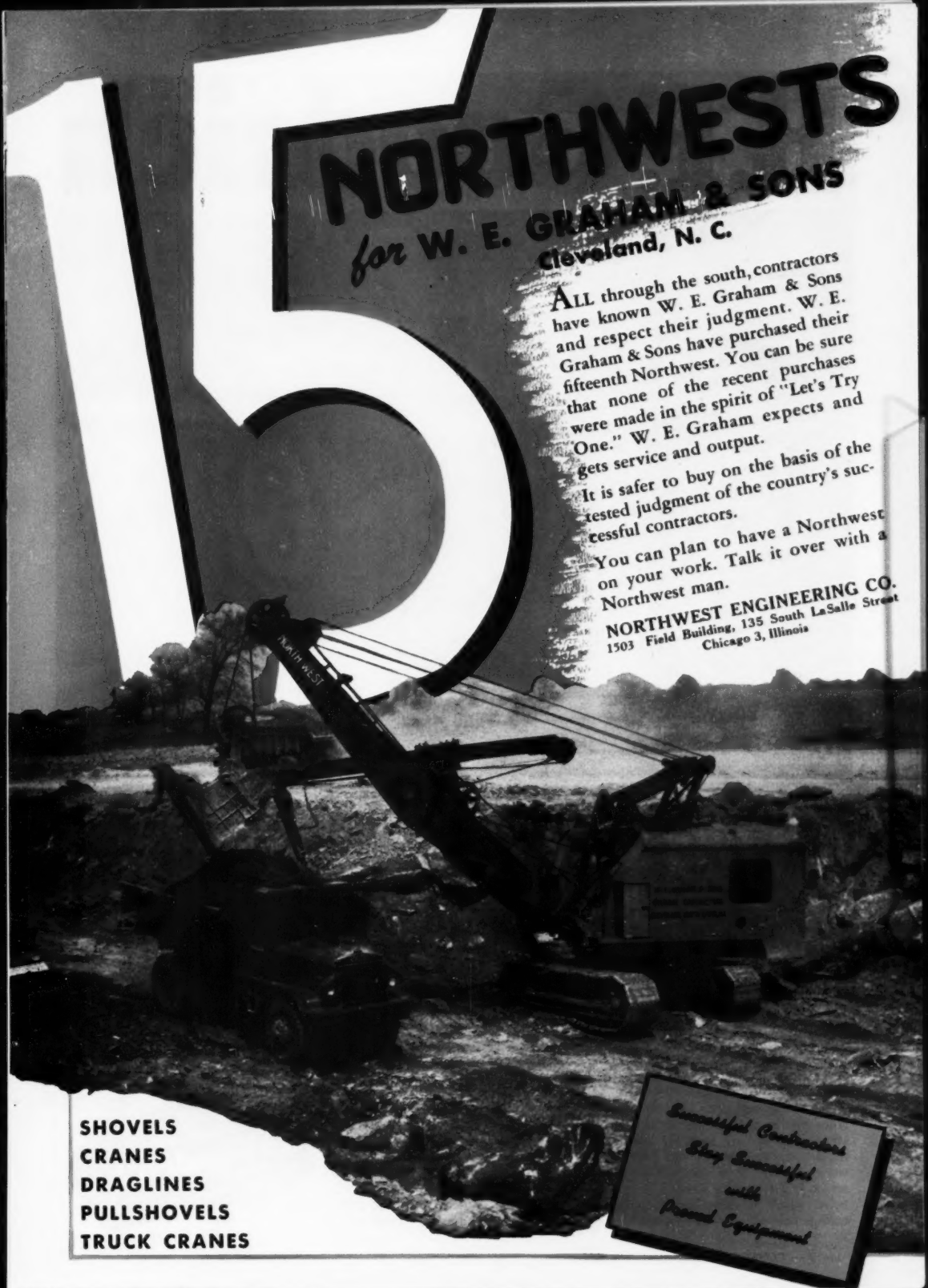
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NORTHWESTS
for W. E. GRAHAM & SONS
Cleveland, N. C.
ALL through the south, contractors have known W. E. Graham & Sons and respect their judgment. W. E. Graham & Sons have purchased their fifteenth Northwest. You can be sure that none of the recent purchases were made in the spirit of "Let's Try One." W. E. Graham expects and gets service and output.
It is safer to buy on the basis of the tested judgment of the country's successful contractors.
You can plan to have a Northwest on your work. Talk it over with a Northwest man.
NORTHWEST ENGINEERING CO.
1503 Field Building, 135 South LaSalle Street
Chicago 3, Illinois
NORTHWEST
SHOVELS
CRANES
DRAGLINES
PULLSHOVELS
TRUCK CRANES
Successful Contractors
Stay Successful
with
Proved Equipment

B.F.Goodrich

Rock tires enable contractor to recap —never before possible

IDLEWILD AIRPORT, the Brooklyn Battery Tunnel and sections of the New Jersey Turnpike are just a few of the large construction jobs undertaken by the Gull Contracting Co., Inc., of Flushing, New York. Rugged projects like these subject off-the-road tires on this company's 50 fifteen cubic yard dump trucks and 130 other vehicles to extreme abuse — mud, rock, slime and debris. Says William Gull:

"Normally our tires take so much abuse that by the time the tread wears off, the casings are so badly cut and bruised that we discard them. Recently we got over 275 working days on a set of B. F. Goodrich Rock tires with nylon shock shields. The walls and casings held up so well that the tires were recapped. These tires are now in use and are performing excellently. This is the first time in 25 years of construction business that we were able to recap a set of tires."

And this company reports BFG tires give better traction and wear than other leading makes. The reason for such superior service lies under the tread rubber. There you'll find the nylon shock shield — an exclusive B. F. Goodrich development. Strong, elastic nylon cords stretch together under impact to shield the tire body from smashing road shock.

Off-the-road operators save money 4 ways because of this shield found in all BFG tires of 8 or more plies. More tires can be recapped for more miles per recap. Tire mileage is increased, bruise resistance is increased and there is less danger of tread separation.

B. F. Goodrich makes off-the-road tires to meet your requirements and save you money. See your local dealer for complete details or write *The B. F. Goodrich Company, Akron, Ohio.*

RESEARCH KEEPS
B.F.Goodrich
FIRST IN RUBBER

"SELDOM DO WE ENDORSE ANY CONSTRUCTION EQUIPMENT" begins a letter from John B. Taylor, Taylor Brothers president, pictured here on the job, ". . . but after using the new 34E . . . we feel it our responsibility to write you."

According to its president, John B. Taylor, Taylor Brothers Company, Inc., paving contractors from Birmingham, Michigan, have found that the new Worthington Model WP paver will lay more highway faster and at lower cost than any paver his company knows of.

Says Mr. Taylor: "We thought we knew about your pavers' superiority after using them for 20 years, but this new 34E beats them all."

The Taylor Company has been using its Worthington Dual Drum Paver on a paving job near Dearborn.

The new Worthington paver is the practical result of forty years of experience in building pavers and other construction equipment. Learn how it can help speed *your* paving jobs by writing for Bulletin R-1700-B7 to *Worthington Corporation, formerly Worthington Pump and Machinery Corporation, Construction Equipment Division, Plainfield, New Jersey.*

NEW WORTHINGTON DUAL-DRUM PAVER at work for Taylor Brothers on a paving job near Dearborn, Michigan. Taylor's job reports indicate that the new paver, with its six-and-a-half-second skip, faster transfer and discharge automatic water control system, and hydraulically controlled bucket, is laying more highways and streets at less cost.

R.2.6

WORTHINGTON
Construction Equipment

If It's A Construction Job, It's A BLUE BRUTE Job

The compressor went into the hole

...but the contractor didn't!

(A true story based on Hartford File #10797)

We were towing our air compressor from one job to another. Moving right along, too. On a bend, it broke loose from the tractor, landed in a ditch, and banged itself up badly. Repairs cost plenty—$1267.15. But this didn't put the company in a hole. We had Hartford Contractors' Equipment Insurance, so Hartford footed the bills.

Maybe not this week . . .

Maybe not this month . . .

But sure as you're in the construction business, something like this can happen to one of your expensive machines sooner or later. And when it does . . .?

When it does, *provided you've got Hartford Contractors' Equipment Insurance* . . . you'll have cash on the barrelhead to pay for repairs.

See your Hartford Fire Insurance Agent or insurance broker. At moderate cost, you can make sure that help—and cash—are standing by when needed.

Year in and year out you'll do well with the

Hartford

Hartford Fire Insurance Company • Hartford Accident and Indemnity Company
Hartford Live Stock Insurance Company • *Hartford 15, Connecticut*

★ JOB TALK ★

To Help You . . .

Information is Available

Contractors and their personnel will receive another valuable contribution in maintenance information next month in CONSTRUCTION METHODS AND EQUIPMENT for July—the annual Equipment Maintenance Directory. Included will be a special section listing manuals available on the operation, maintenance and repair of the construction equipment they operate.

Most manufacturers of construction equipment prepare helpful manuals on the machines they produce. And they are anxious to get them into the hands of the men who use their machines. The July listing of maintenance information available will make it a simple matter for the operator to see what is available and request what he needs. The manufacturer, in replying to a specific request, can send out the right information immediately and be reasonably certain that his product is getting the attention it requires for a long service life.

Standards for Fasteners

Completely revised and enlarged, the second edition of "Bolt, Nut and Rivet Standards" is a 256-p book released by the Industrial Fasteners Institute. It is the only publication that contains all current standards for commercial fasteners.

Among the new standards included are those for bolts, screws, rivets, unified screw threads and the newly adopted square and hexagon bolts and nuts unified dimensionally with England and Canada. There is a large section listing weights and stock production sizes; also information on screw threads, gaging practices and a complete listing of recognized fastener specifications.

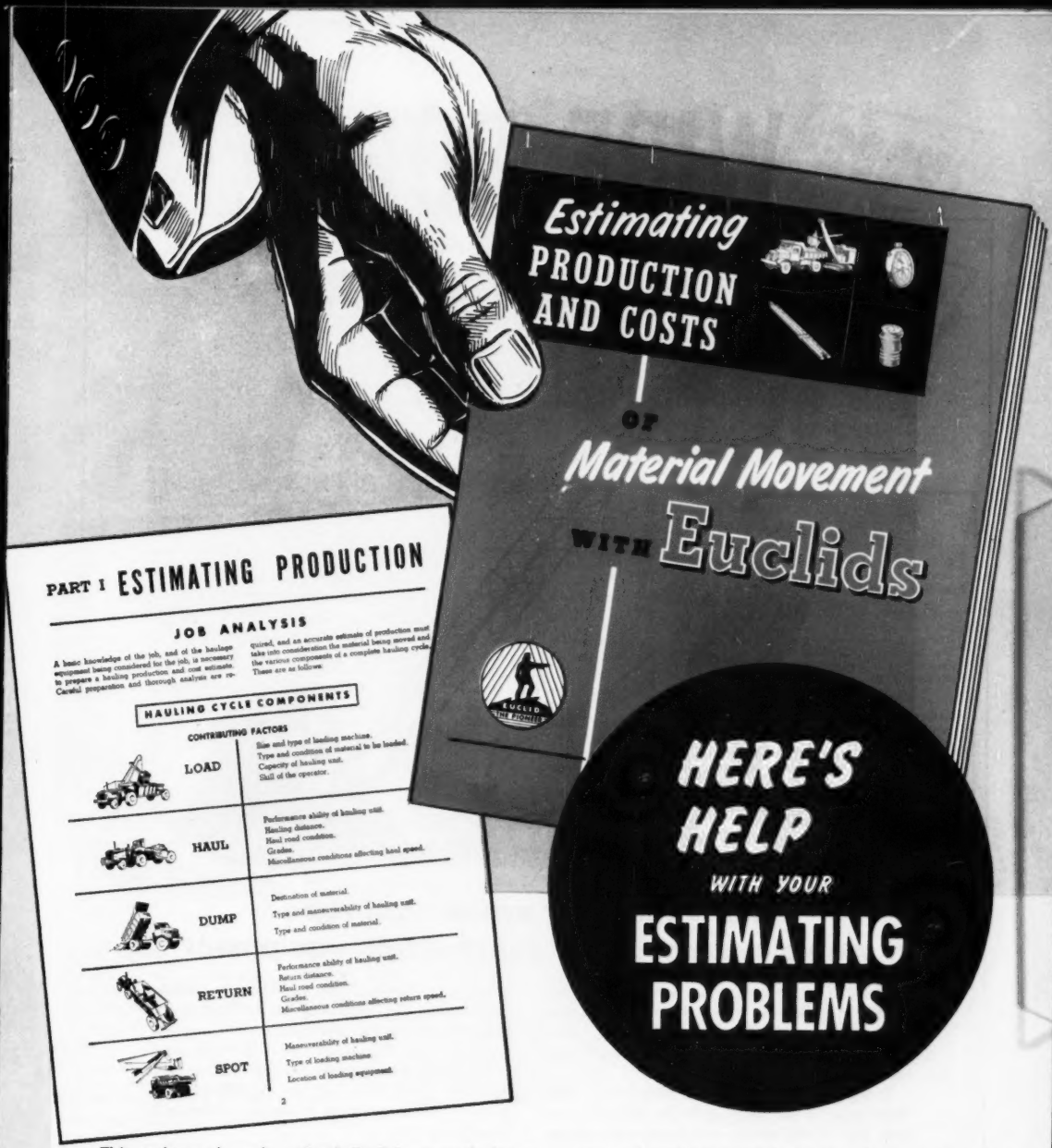
The book was published as a service both to users and producers—to acquaint them with accepted standards, including nomenclature and practices. Copies may be obtained at $3 each from the Industrial Fasteners Institute, 3648 Euclid Ave., Cleveland 15, Ohio.

Larger Brick Cuts Costs

Every major national building code permits a 6-in. masonry wall for single-family, one-story residential construction, according to the Structural Clay Products Institute. In that direction, the Institute has developed its SCR brick, measuring 11½ in. long, 2 1/6 in. high and 5½ in. thick.

The new brick is a through-the-wall unit, and savings are achieved in the

(Continued on page 16)


Estimating
PRODUCTION
AND COSTS
OF
Material Movement
WITH Euclids
PART I ESTIMATING PRODUCTION
JOB ANALYSIS
A basic knowledge of the job, and of the haulage equipment being considered for the job, is necessary to prepare a hauling production and cost estimate. Careful preparation and thorough analysis are required, and an accurate estimate of production must take into consideration the material being moved and the various components of a complete hauling cycle. These are as follows:
HAULING CYCLE COMPONENTS
CONTRIBUTING FACTORS
LOAD
Size and type of loading machine.
Type and condition of material to be loaded.
Capacity of hauling unit.
Skill of the operator.
HAUL
Performance ability of hauling unit.
Hauling distance.
Haul road condition.
Grades.
Miscellaneous conditions affecting haul speed.
DUMP
Destination of material.
Type and maneuverability of hauling unit.
Type and condition of material.
RETURN
Performance ability of hauling unit.
Return distance.
Haul road condition.
Grades.
Miscellaneous conditions affecting return speed.
SPOT
Maneuverability of hauling unit.
Type of loading machine.
Location of loading equipment.
2
HERE'S HELP
WITH YOUR
ESTIMATING PROBLEMS

This enlarged and revised Euclid manual shows how to make a job analysis and provides a method of estimating production and costs for off-the-highway hauling equipment. It will enable you to determine the number and size of hauling units required for any job, and the estimated cost of moving material per cubic yard or ton.

You'll find the data contained in this book helpful and easy to use. If you haven't received a copy, contact your Euclid Distributor, or write us direct . . . on your letterhead, please. There is no charge or obligation, of course.

The EUCLID ROAD MACHINERY Co., CLEVELAND 17, OHIO

CABLE ADDRESS: YUKLID CODE: BENTLEY

EUCLIDS *Move the Earth*

WIRE ROPE

This is the most economical rope we've ever made for construction equipment

ROEBLING is the best known name in wire rope. That's partly because we were the first wire rope maker in America. But more than that, we've always led in developing better wire and better rope for every purpose.

Today's Roebling Preformed "Blue Center" Steel Wire Rope is the best choice for efficiency and long life on excavating and construction equipment. This rope has *extra* resistance to crushing and abrasion . . . stands up under rough going. It saves you time and cuts costs.

There's a Roebling wire rope of the right specification for top service on any job. Call on your Roebling Field Man for his recommendations. John A. Roebling's Sons Company, Trenton 2, New Jersey.

ROEBLING

ATLANTA, 934 AVON AVE. • BOSTON, 51 SLEEPER ST. • CHICAGO, 5525 W. ROOSEVELT RD. • CINCINNATI, 3253 FREDONIA AVE. • CLEVELAND, 701 ST. CLAIR AVE., N. E. • DENVER, 4801 JACKSON ST. • DETROIT, 915 FISHER BLDG. • HOUSTON, 5216 NAVIGATION BLVD. • LOS ANGELES, 5340 E. HARBOR ST. • NEW YORK, 19 RECTOR ST. • ODESSA, TEXAS, 1920 E. 2ND ST. • PHILADELPHIA, 230 VINE ST. • SAN FRANCISCO, 1740 17TH ST. • SEATTLE, 900 1ST AVE. S. • TULSA, 321 N. CHEYENNE ST. • EXPORT SALES OFFICE, TRENTON 2, N. J.

"Cash for a Name" CONTEST

$300.00 FIRST PRIZE

$200.00 Second Prize

$100.00 Third Prize

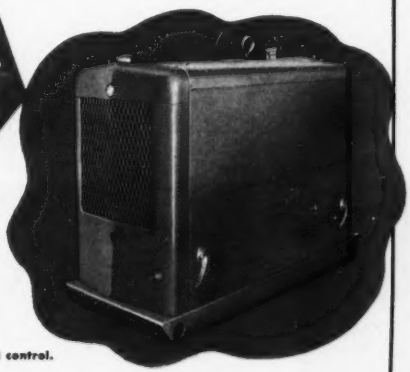
Name this New Gas Engine-driven Welder

Suggest a name for this precision-built, mobile, gas engine-driven field welder. The name should suggest that it is the best self-contained and mobile welding machine in the welding industry.

The best name, in accordance with the rules, will win you $300.00 in cash! Second and third place winners will receive $200.00 and $100.00 respectively.

Study the specifications below. Think of a name that describes ruggedness, stamina and endurance. Remember that this welder is easy to maintain and service because component parts are conveniently accessible. It starts with a quick surge of power and provides a smooth, forceful arc. It's THE welder for all kinds of welding jobs in the field; for pipeline, maintenance and construction jobs.

HERE IT IS!



Specifications

200 amperes, 40 volts, N.E.M.A. Rated. Step-type welding current control, continuous voltage control.

110 volts, 2½ kilowatts auxiliary power.

Liquid-cooled industrial Engine, 1800 rpm. with magneto ignition, automatic idle control and dual manual control.

Skid-mounted. Two- or four-wheel trailer available.

Available with or without instruments, self starter, hoods for complete enclosure.

Exciter is readily accessible.

Weight, approx. 1212 pounds.

Contest Rules

1. This is a naming contest starting June 1, 1952 and ending at midnight July 12, 1952. Contestants are to submit names which, in the opinion of the judges, are appropriate for the new A. O. Smith Gas Engine-driven D.C. Welder described. Each name must be submitted on a separate piece of paper or the coupon from this advertisement together with a brief supporting statement and the legibly written name and address of the contestant. Writing ability will have no bearing on the contest.

2. The three names selected by the judges as best shall be declared the winners of first, second and third prizes respectively. In the event identical names are submitted by different contestants, the ideas contained in the brief supporting statements shall be considered by the judges in selecting prize winners.

3. This is a nationwide contest and is open to readers of this publication and others who use welding equipment, except employees of A. O. Smith Corporation and its advertising agency, and members of their families.

4. In the case of ties, duplicate prizes will be awarded.

5. Winners will be notified by mail, individually. Winners' names will be announced in the September issue of this publication in an advertisement on this new gas engine driven-welder.

6. The decision of the judges will be final. No entries will be returned but will become the property of A. O. Smith Corporation.

7. All entries must be postmarked before midnight of July 12, 1952 and mailed to A. O. Smith Corporation, Welding Products Division, Milwaukee 1, Wisconsin.

8. Entries will be judged by executives of Henri, Hurst & McDonald, Inc., advertising agency.

A.O. SMITH 78th ANNIVERSARY 1874 - 1952

A.O.Smith

WELDING PRODUCTS

Made *by* Welders . . . *for* Welders

THIS COUPON MAY BE WORTH $300.00 IN CASH TO YOU!

A. O. Smith Corporation
Welding Products Division, Dept. CM-652
Milwaukee 1, Wisconsin

I offer the following name (and supporting statement) as my entry in your new gas engine-driven welder naming contest:

_____

(write the name you suggest on this line; write supporting statement on margin of this page)

Name _____

Firm _____

Address _____

City _____ Zone _____ State _____

Lead-Zinc Mining in Utah—Bethlehem Hollow teams up with carbide-tipped bits on the 1500-ft level of the Mayflower Mine of New Park Mining Co. This jumbo-mounted drifter puts in 6-ft holes through abrasive sulphide ore bodies.

Dam Building in Northwest — Excavating work at the site of Chief Joseph Dam on the Columbia River called for more than 100 tons of Bethlehem Hollow. This is a recent addition to the long list of big projects where this "old reliable" of drill steels has had the responsibility for keeping drilling on schedule.

Buffalo Underpass Job — Rock drilling doesn't stop for chilly weather in Buffalo. Here Bethlehem Hollow bores into hard, flint-streaked rock on an excavating job that removed 70,000 cu yd of rock on a four-lane underpass contract.

Steel that chews rock from Vermont to California

Deep-holes, short-holes. Hard, abrasive ore . . . basalt . . . dolomite. Steel bits . . . bits with carbide inserts.

Whatever the depth of hole, type of rock, or style of detachable bit, there's one hollow drill steel that does the job from coast to coast, and does it well. It's Bethlehem Hollow.

Make sure you've got this old reliable on the job!

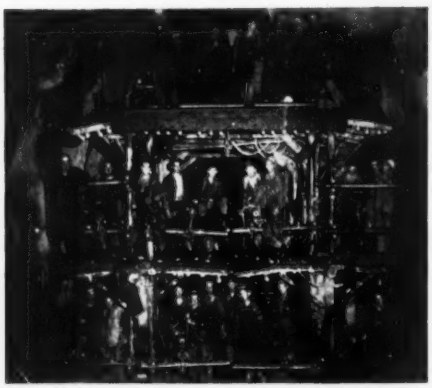
IMMEDIATE DELIVERY

Bethlehem Hollow Drill Steel is ready to ship from our mill depot in all popular sections and sizes. Also available from local converters. And if you need solid drill steel, quarrying steels, auger drill steel, or steel for stone-dressing tools . . . remember to specify Bethlehem. Each steel is engineered to give a lot of service.

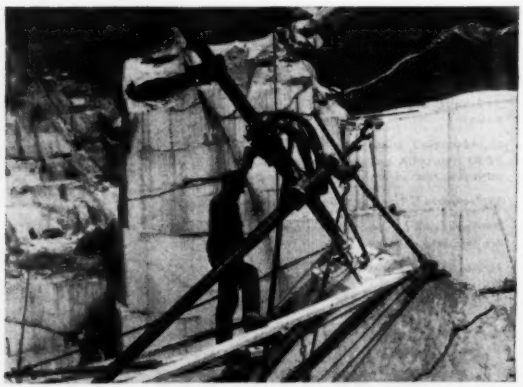
BETHLEHEM STEEL

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation



California Tunnel Project—Here's the three-story drill carriage and one of the crews that smashed three records for driving large-diameter tunnels. Big Creek Project No. 4 was the scene of this outstanding performance of Bethlehem Hollow.



Quarrying Vermont Granite—A real test of drill-steel quality is provided by "Rock of Ages," a hard, dense-grained granite. This rock drill, using Bethlehem Hollow, is mounted on a movable saddle so that a line of holes can be drilled in perfect alignment. Quarries everywhere rely on Bethlehem Hollow.

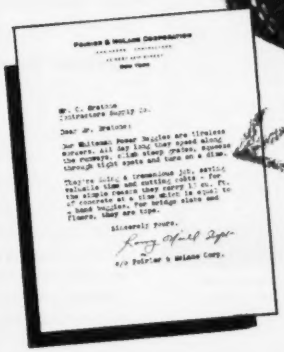
BETHLEHEM HOLLOW DRILL STEEL

Whiteman POWER BUGGIES are doing a TREMENDOUS JOB

Climbs 25% grades with ease.

Positive "in-gear" mechanism of dump and return.

Also available with dumping stake-type body.



"Our Whiteman Power Buggies are tireless workers. All day long they speed along the runways, climb steep grades, squeeze through tight spots and turn on a dime. They're doing a tremendous job, saving valuable time and cutting costs —for the simple reason they carry 13 cu. ft. of concrete at a time,which is equal to 4 hand buggies. For bridge slabs and floors, they are tops."

Larry O'Neill, Supt.
c/o Poirier & McLane Corp.

Whiteman

THE LEADER IN CONCRETE EQUIPMENT

WHITEMAN MFG. CO., DEPT. C
3249 Casitas Ave., Los Angeles 39, Calif.

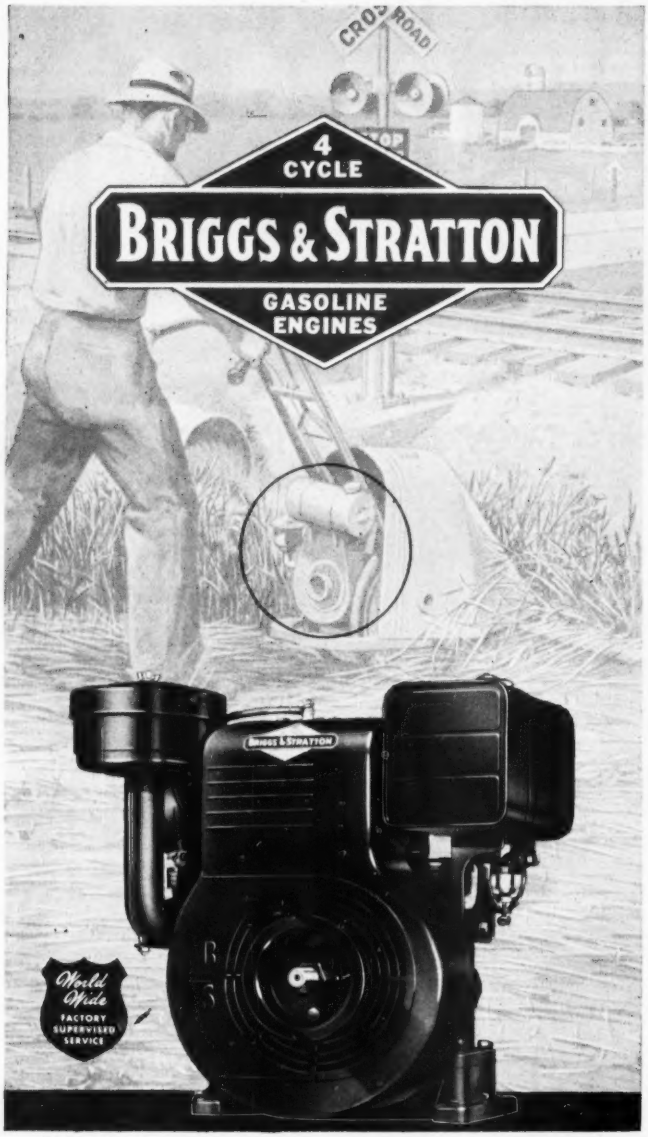
Please send prices, literature and name of distributor for ____ Power Buggy ____ Screeding Machines ____ Floating Finishing Machines.

Name _____

Firm _____

Address _____

City _____ Zone ____ State _____



Preferred power on sickle-bar mowers and power scythes — the world's most widely used single-cylinder gasoline engines on hundreds of kinds and types of machines, tools, appliances, used by industry, construction, railroads, oil fields, and on equipment for farms and homes.

WHEN you want the best in machines, tools, appliances — equipped with the best air-cooled power — you will be sure if they are powered by Briggs & Stratton — the recognized leader in single-cylinder, 4-cycle, air-cooled gasoline engines. Briggs & Stratton Corporation, Milwaukee 1, Wisconsin, U.S.A.

In the automotive field Briggs & Stratton is the recognized leader and world's largest producer of locks, keys and related equipment.

JOB TALK . . . Cont. from p. 10

elimination of backup materials, as well as reducing a bricklayer's time in building the wall. Each SCR brick has 10 holes cored vertically to lighten the weight and to make laying easier. Holes are large enough to receive a man's thumb and permit a somewhat normal grip. A jamb slot is provided at one end to aid the installation of metal windows.

Walls of SCR brick have been accepted by the Federal Housing Administration, American Standards Association and National Board of Fire Underwriters. Harry C. Bates, president of the Bricklayers, Masons & Plasterers International Union, has endorsed the new type brick and believes that its use should help to stimulate masonry house construction. In appearance and size of face, the SCR brick is the same as standard Norman brick.

Aluminum Window Standards

Specification standards for aluminum windows are available in an attractive, profusely illustrated booklet available from the Aluminum Window Manufacturers Association, 74 Trinity Pl., New York 6, N. Y. Specifications cover double-hung, casement, projected and awning types, both for commercial and residential uses. Information on detailed specifications for the use of architects is offered and shorter digests for builders.

Published for the first time are standard specs covering awning sash, standard sizes and modular sizes. Copies are available from the Association.

Better Repair Parts Books

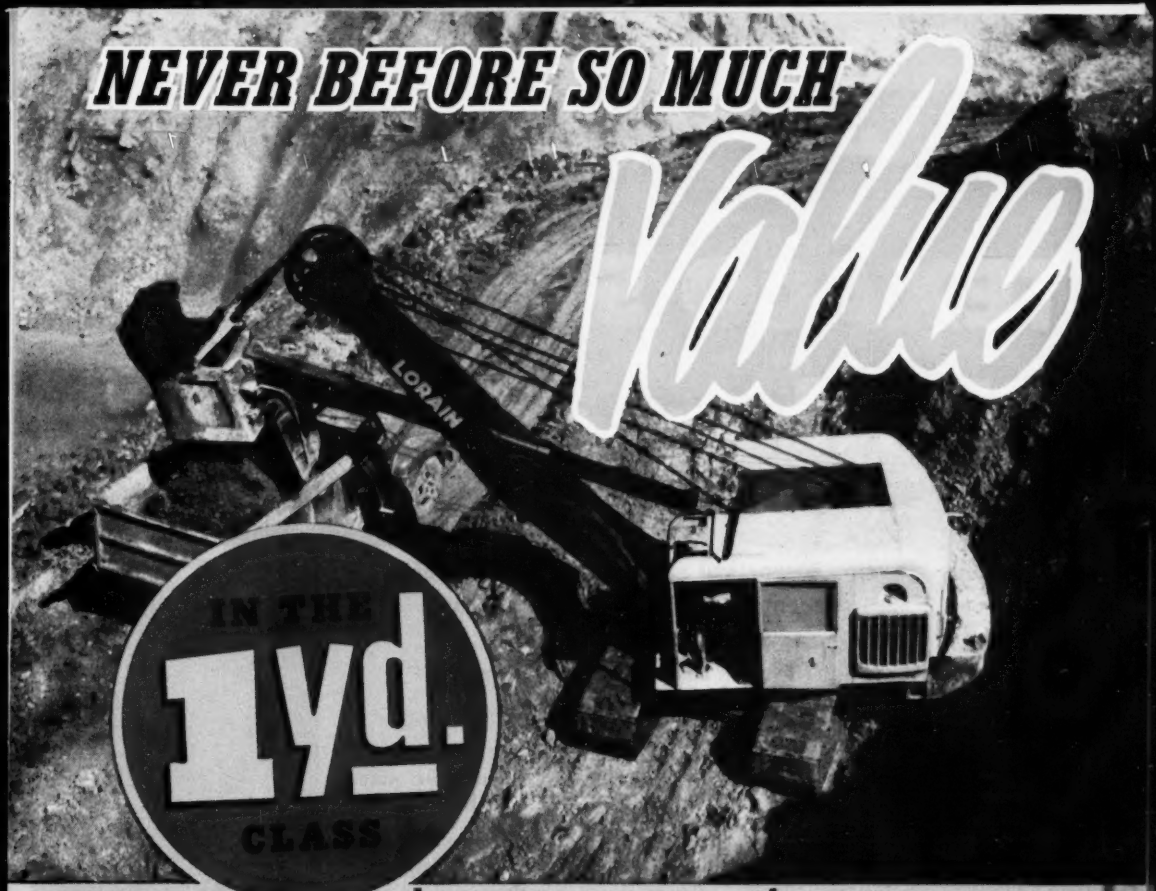
Improvement of repair parts books through standardization of sizes, bindings, illustrations, assembly breakdown, alphabetical indexes, numerical part number indexes and similar useful makeup has been an activity of interested groups for several years.

A joint committee composed of members of the Associated General Contractors and the Associated Equipment Distributors prepared a booklet with direct suggestions for the improvement of such books. The committee has compiled and sifted suggestions received from equipment distributors and contractors alike—and then outlined minimum requirements for a useful repair parts book.

These proposals were turned over to manufacturers a few years ago. But in recent discussions both the AGC and AED again have requested every manufacturer of construction equipment,

(Continued on page 20)

NEVER BEFORE SO MUCH Value



AIR CONTROLS

Air does the work on the "50". Air assist controls hoist, crowd, retract operations—full air control for crawler steering and tread lock operation.

HYDRAULIC COUPLING

No shocks, no engine stall with Lorain Hydraulic (fluid) Coupling. It's the only 1-yd. machine with Hydraulic Coupling as standard.

CHOICE OF 4 CRAWLERS

Standard, extra-long, extra-wide, wide and long . . . you can fit the "50" with a crawler to match exactly any ground, or working condition.

CENTER DRIVE CONSTRUCTION

Here's direct power—where you want it. Gang-up full engine power in any one operation, or spread power over simultaneous, synchronized operations.

5 INTERCHANGEABLE FRONT ENDS

For complete job versatility, any one of 5 interchangeable front ends can be used on the Lorain-50... shovel, crane, clamshell, dragline and hoe.

These 5 reasons are only a few of the many reasons why the Lorain-50 is your best bet in a 1-yard shovel-crane. Throughout the Lorain-50, there is more value, true *"Balanced Quality"* to give you fast, responsive, dependable performance in any kind of service. You will find more quality features in the "50" than in any other machine in the 1-yard class.

Be sure to obtain full facts on the "50" from your Thew-Lorain Distributor. Compare Lorain *"Balanced Quality"* in dollar value before you buy.

THE THEW SHOVEL CO.
LORAIN, OHIO

THEW LORAIN 50

SHOVELS • CRANES • DRAGLINES
CLAMSHELLS • HOE

"The time and TEXACO SIMPLIFIED PLAN are incalculable"

-says General-Shoe-Machines Co.

"Not only is it more economical to use a small number of lubricants," says the contractor for Hungry Horse Dam, Montana, "but there is little chance of error in application . . . a big factor in keeping our equipment on the job and our maintenance costs low."

PRODUCTS USED IN TEXACO SIMPLIFIED LUBRICATION PLAN

1. ENGINE LUBRICATION: Use *Texaco Ursa Oil X***. This fully detergent-dispersive oil keeps both heavy-duty gasoline and Diesel engines clean . . . keeps harmful deposits from forming . . . guards against wear, rust and bearing corrosion. Maintenance costs and fuel consumption are both lower.

2. CHASSIS LUBRICATION: Use *Texaco Marfak*. It's tough, longer lasting. Won't jar or squeeze out of bearings, protects against dirt, rust, wear. *More than 400 million pounds of Texaco Marfak have been sold.*

3. WHEEL BEARING LUBRICATION: Use *Texaco Marfak Heavy Duty*. It seals out dirt and moisture, seals itself in – assuring longer bearing life, safer braking. No seasonal change required.

4. CRAWLER TRACK LUBRICATION: Use *Texaco Track Roll Lubricant*. It gives long-lasting protection against dirt, water and wear. Reduces maintenance costs.

5. AIR COMPRESSOR LUBRICATION: Use recommended Texaco air compressor oils. There is one exactly suited to your particular operating conditions.

6. ROCK DRILL LUBRICATION: Use *Texaco Rock Drill Lubricant EP*. It has "extreme pressure" properties that give superior protection against wear. It guards against rust whether drills are running or idle.

Follow the Texaco Simplified Lubrication Plan for greater savings and convenience on every job. A Texaco Lubrication Engineer will gladly help you set it up to meet your particular conditions. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

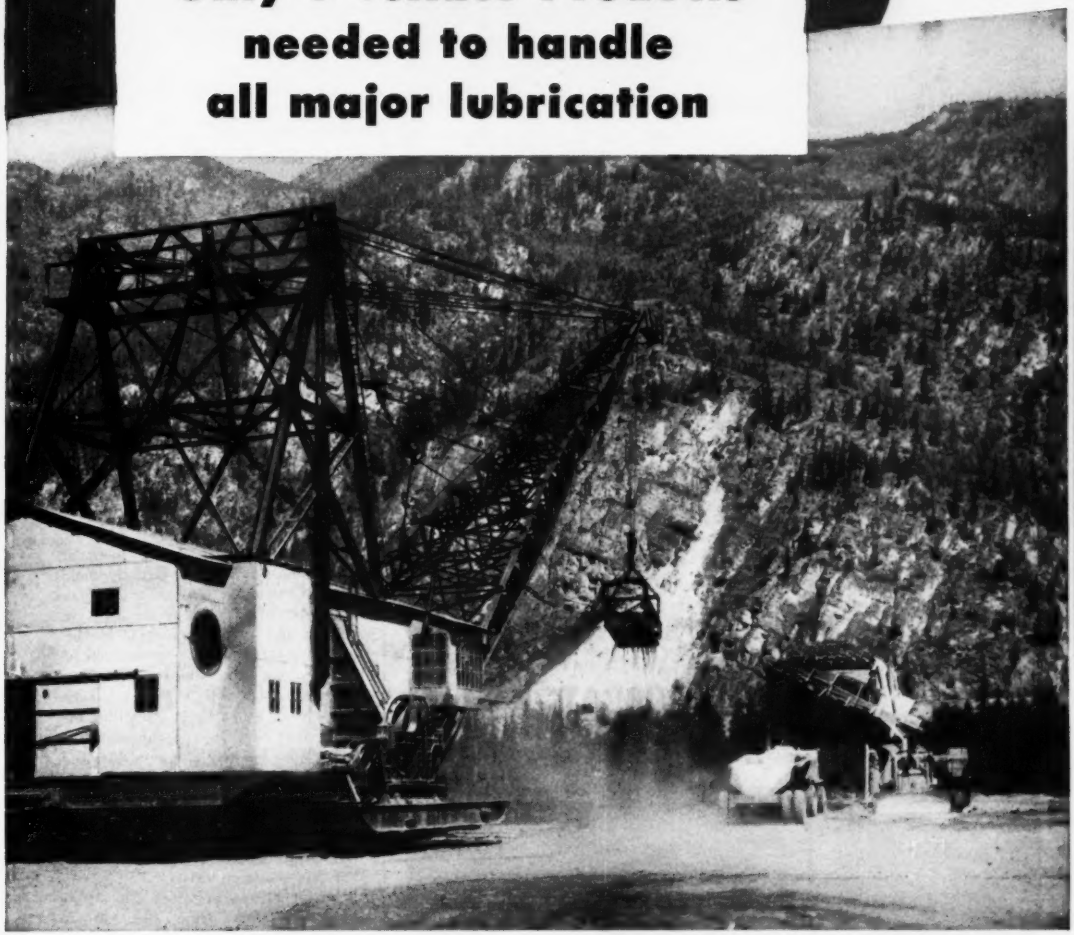
TUNE IN . . . TEXACO STAR THEATER starring MILTON BERLE on television every Tuesday night. See newspaper for time and station.

TEXACO

TEXACO

confusion saved by the LUBRICATION

Only 6 Texaco Products needed to handle all major lubrication



Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT

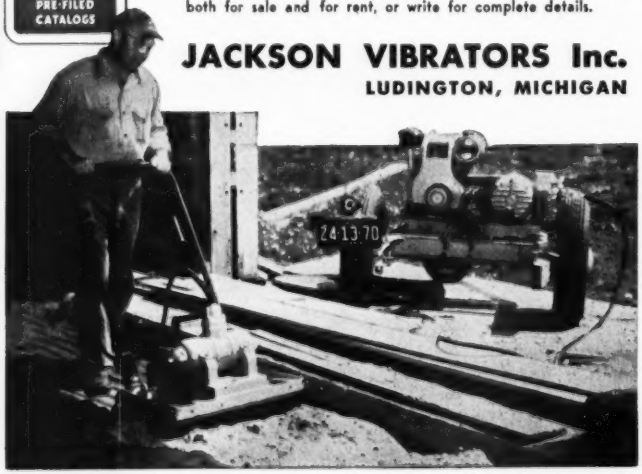
Faithfully yours 50 TEXACO *for Fifty Years*

ASPHALT: For compacting asphalt in such operations as highway widening and patching, paving walks, drives, railway platforms and crossings, there's nothing that equals the convenience and time-saving features of the Jackson Vibratory Compactor. And the quality of work it does is unsurpassed by far more costly and cumbersome equipment. Small as it is, the Jackson delivers up to 4500 1¾ ton blows per minute. It propels itself and will compact 900 to 1200 sq. ft. per hour close to maximum density of the asphaltic mix used. And it is easy to move from place to place by means of a quick pick-up trailer unit on which the power plant, from which it is operated, is mounted.

GRANULAR SOILS: The same machine as above, with a change of base, is ideal for compacting granular soils for concrete floor-sub-base, in trenches, close to footings and abutments and many other places. It quickly reaches, in two passes, maximum density of granular soils. See it at your Jackson Distributor, who has it both for sale and for rent, or write for complete details.

SEE OUR CATALOG IN GILLETTES HEAVY CONSTRUCTION PRE-FILED CATALOGS

JACKSON VIBRATORS Inc.
LUDINGTON, MICHIGAN



JOB TALK . . . Cont. from p. 16

when preparing new repair parts books, to seriously consider these proposals. To assist this commendable effort, the officers of the Construction Industry Manufacturers Association recently urged their membership to recommend standardized procedures to their departments writing these books.

Boosting Vermiculite

At the recent annual meeting of the Vermiculite Institute test results on vermiculite concrete sandwich panels in tilt-up construction were presented. Its light weight (25 lb/cu ft) and resilience were emphasized, along with fire resistance and adequate insulation values.

Industry speakers described how savings in structural steel and cost reductions up to $4 per sq ft are possible in a typical three-story building with light steel framing fireproofed with lightweight vermiculite-gypsum plaster. Extra advantages include quicker erection and closing-in of buildings against the elements, fewer interruptions through inclement weather and less formwork and scaffolding.

Future plans call for the organizing of a techincal service department to coordinate the use of vermiculite with products of allied industries. A report on numerous tests conducted within the last year on vermiculite plastering and acoustical plastic told of unusual qualities in bonding with a base coat.

"Human Engineering" May Prevent Accidents

J. Dewey Dorsett, general manager of the Association of Casualty and Surety Companies, foresees a new pattern required to prevent accidents in industry and on the highways. He believes that there must be devised a technique along the lines of human engineering that will "save people from themselves", primarily by dispelling the notion that they lead a charmed life.

He said, "We may attribute this need to a strange perversity in human nature that stubbornly refuses to heed warnings and considers accidents only in terms of application to someone else, but does not refuse to bemoan the fact that this condition exists."

Dorsett stresses persistence in telling the safety story again and again—keeping it dressed in the latest fashion and remembering that it is nothing more than a sales campaign. Like all other sales efforts, sales resistance must be broken down effectively. He makes the point that safe living should be a lot more exciting than careless living. And he recommends research into hu-

(Continued on page 42)

Turning bog into runway

on Whidbey Island

To speed the contract for a new runway at Whidbey Island Naval Air Station, Washington, Peter Kiewit Sons' Co. have used "Caterpillar" DW20 Tractors and No. 20 Scrapers on long, fast hauls.

The first problem was to remove 15 to 25 feet of bog that occupied the area, before making the fill. The contract called for moving more than 750,000 cubic yards of earth. "Cat" equipment on the job included 3 DW20 Tractors and No. 20 Scrapers, 15 D8 Tractors, a D6 Tractor, 5 No. 12 Motor Graders and 3 No. 80 Scrapers.

Material for the fill was rocky, sandy, very dry and hard to load, so that D8 push-loading was required. With pay loads of 17 cubic yards, the DW20s made the round trip of over 10,000 feet at speeds that gave each unit an average of 125 pay yards per hour. Contributing to this efficient operation was the haul road, carefully maintained and kept in first-class condition at all times.

Good equipment is valuable property in these times. It's worth taking care of. A few minutes a day spent on proper maintenance will pay off in many added hours of profitable work life. Consult your "Caterpillar" Dealer. He's there to help you with all the service facilities at his disposal.

CATERPILLAR, PEORIA, ILLINOIS

CATERPILLAR

REG. U. S. PAT. OFF.

DIESEL ENGINES
TRACTORS • MOTOR GRADERS
EARTHMOVING EQUIPMENT

NOW . . . GYRO-FLO

Ingersoll-Rand *Rotary* Mobil-Air

GYRO-FLO 105 cfm

Weighs only 2630 lbs., ready to run. Available matched to GM 2-51 diesel or Continental F-162 gasoline engine.

GYRO-FLO 210 cfm

Weighs only 4360 lbs., ready to run. Available matched to GM 4-51 diesel or Continental M-330 gasoline engine.

No other Portable Compressor offers you all these advantages!

- **As much as 40% Lighter In Weight.** And as much as 20% smaller in overall size.
- **No Valves, Pistons, Rods Or Clutch.** No valves to leak, no reciprocating parts to wear out. Smooth, vibration-free operation.
- **Oil Injection Cooling.** Seals against air slippage and keeps discharge temperature below 200°F. Compressor cooling system independent of engine cooling.
- **Low Oil Consumption** throughout life of compressor. Oil injected into the air for cooling is removed by a separator and recirculated.
- **"Air-Glide" Capacity Control.** Provides smooth, stepless regulation of compressor capacity all the way from 0 to 100% output. Holds pressure within 10 psi range at all loads. Keeps engine at minimum speed.
- **Takes Full Advantage Of Modern Engine Speeds.** Compressor matched to nationally-known diesel or gasoline engines.

GYRO-FLO *is an addition to the* **CONTRACTORS' COMBINATION**

COMPRESSORS • AIR TOOLS
ROCK DRILLS • TURBO BLOWERS
CONDENSERS • CENTRIFUGAL PUMPS
DIESEL AND GAS ENGINES

PORTABLE COMPRESSORS IN 4 SIZES

GYRO-FLO 315 cfm

Weighs only 5200 lbs., ready to run. Available matched to GM 3-71 diesel or Continental B-427 gasoline engine.

GYRO-FLO 600 cfm

Weighs only 9500 lbs., ready to run. GYRO-FLO rotary compressor matched to powerful GM 6-71 diesel engine.

Important savings in operation and maintenance with this complete line of rotary compressors

"Better any way you look at it." That was the verdict of contractors everywhere when the 600 cfm GYRO-FLO compressor was introduced last year. And now—the same cost-saving advantages of the *rotary compressor* have been extended to three smaller sizes.

The GYRO-FLO is the most revolutionary design change during Ingersoll-Rand's 50 years of portable compressor history. The GYRO-FLO is far smaller—simpler—lighter in weight—and easier to maintain—than any other portable compressor heretofore available.

The features described on opposite page speak for themselves. And in actual on-the-job performance, GYRO-FLO compressors have repeatedly proved their dependability under the most rigorous operating conditions.

If you need more or cheaper air—go GYRO-FLO. Your nearest I-R representative will be glad to give you the whole story.

Ingersoll-Rand

11 BROADWAY, NEW YORK 4, N. Y. 765-2

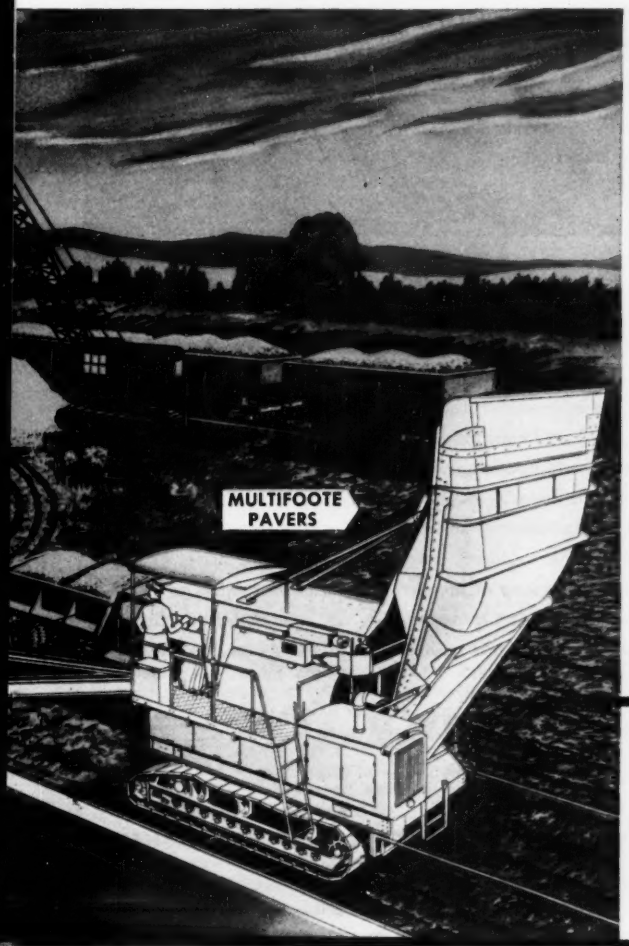
I'M READY
for any concrete paving job with my
BLAW-KNOX
"COMPLETE PACKAGE"
CLAMSHELL BUCKETS
PORTABLE BULK CEMENT PLANTS
TRUCK MIXERS
PORTABLE AGGREGATE BATCHING PLANTS
STEEL CURB AND GUTTER FORMS
STEEL PAVING FORMS
FINISHING MACHINES
PAVING SPREADER-VIBRATORS
PRECISION SUBGRADERS

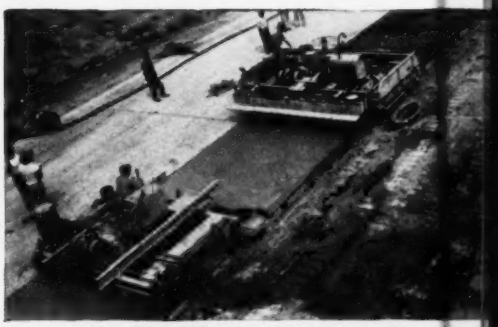
Superhighways, airports, even dams, bridges, buildings . . . when they're built with concrete, they're duck soup for my Blaw-Knox "Complete Package".

Costs are kept to the absolute minimum! The "Complete Package" contains every piece of equipment needed to assure a steady, balanced production flow with low-cost assembly-line efficiency. The job is 100% mechanized, from handling materials to finishing the slab.

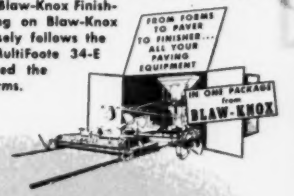
Other reasons why I can operate at lower cost are the "one-source" advantages my Blaw-Knox package gives me. Production steps along at a profit-making clip because wherever I'm working, I can get parts and expert service fast for *all* my equipment, from the nearest Blaw-Knox distributor. Just think—one Blaw-Knox Service Engineer takes care of everything. The entire package is backed by *one* construction-experienced manufacturer who is interested in my success. There's only one financial contact, too . . . that eliminates a lot of bookwork headaches.

With my Blaw-Knox "Complete Package", there's one thing I'm sure of. When the big, juicy contracts come up and they need a man with all the equipment to set up a low-cost job, *I'm ready!*





Blaw-Knox "Package" equipment on the Edens Expressway near Chicago. Blaw-Knox Batching Plants for aggregate and cement were used to insure accurate batching. The Blaw-Knox Spreader with vibratory pan attachment assured satisfactory and economical placement of the low-slump, air-entrained concrete. The Blaw-Knox Finishing Machine, also riding on Blaw-Knox Steel Paving Forms, closely follows the Spreader-Vibrator. A MultiFoote 34-E Dual Drum Paver placed the concrete between the forms.



BLAW-KNOX

BLAW-KNOX DIVISION of Blaw-Knox Company

Farmers Bank Bldg. • Pittsburgh 22, Pa.

NEW YORK • CHICAGO • PHILADELPHIA
BIRMINGHAM • WASHINGTON • SAN FRANCISCO

KEEP 'EM MOVING WITH A BAY CITY

207

CHECK THESE FEATURES

- √ Fully Convertible
- √ Long, Wide Crawlers
- √ Alloy Cast Bases
- √ Tandem Drums
- √ Power Booster Clutches
- √ High Line Speeds
- √ Wide Vision Cab
- √ Power Dipper Trip
- √ Pin-Connected Boom

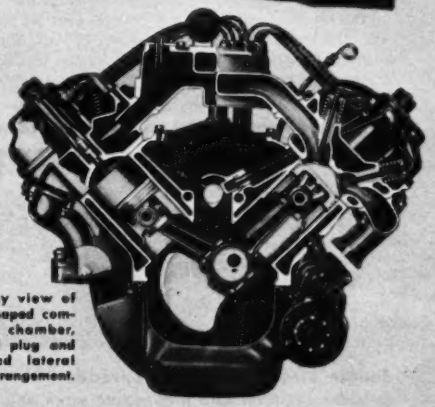
This ¾-yard BAY CITY Dragline keeps trucks moving on a highway construction project in Louisiana. BAY CITY gives a good account of itself on all jobs, large or small, because it is a fine, powerful machine that will give you high daily production and continuous heavy duty operation. The simplified power and operating mechanism and the easily accessible machine assembly means unusually easy and inexpensive operation, maintenance and repair. The BAY CITY is readily convertible to shovel, dragline, clamshell, pile driver or hoe to meet all sorts of production requirements. Sizes to 1¼ yard with 25 ton crane capacity. See your dealer or write today for catalog. BAY CITY SHOVELS, INC., BAY CITY, MICHIGAN.

BAY CITY

SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS

CHRYSLER INDUSTRIAL

offers Greater Power, More Efficiency!



Cutaway view of dome-shaped combustion chamber, centered plug and overhead lateral valve arrangement.

Here's why . . . The great new Chrysler V-8 Industrial Engine is completely new in V-8 design. This engine embodies more desirable characteristics than ever before offered to Industrial engine users.

Hemispherical Combustion Chamber provides 33 per cent more horsepower, 16 per cent higher torque. It increases displacement only 3.2 per cent,* yet develops more power for displacement than any comparable engine in Industrial use. *It is today's most nearly perfect combustion chamber!* It allowed many desirable changes in V-8 design—most important of which are larger and wider spaced valves and "free-flow" intake and exhaust porting.

Centered Spark Plugs provide shorter flame travel through fuel. You get greater power from the same amount of fuel; easier, faster starting, *plus* less carbon deposit in the chamber, adding years to engine life.

Overhead Lateral Valves are larger, wider spaced. They operate cooler, eliminating pre-ignition. This ingenious valve arrangement permits gravity flow of the fuel and air mixture into intake and out of exhaust ports—practically eliminates back pressure.

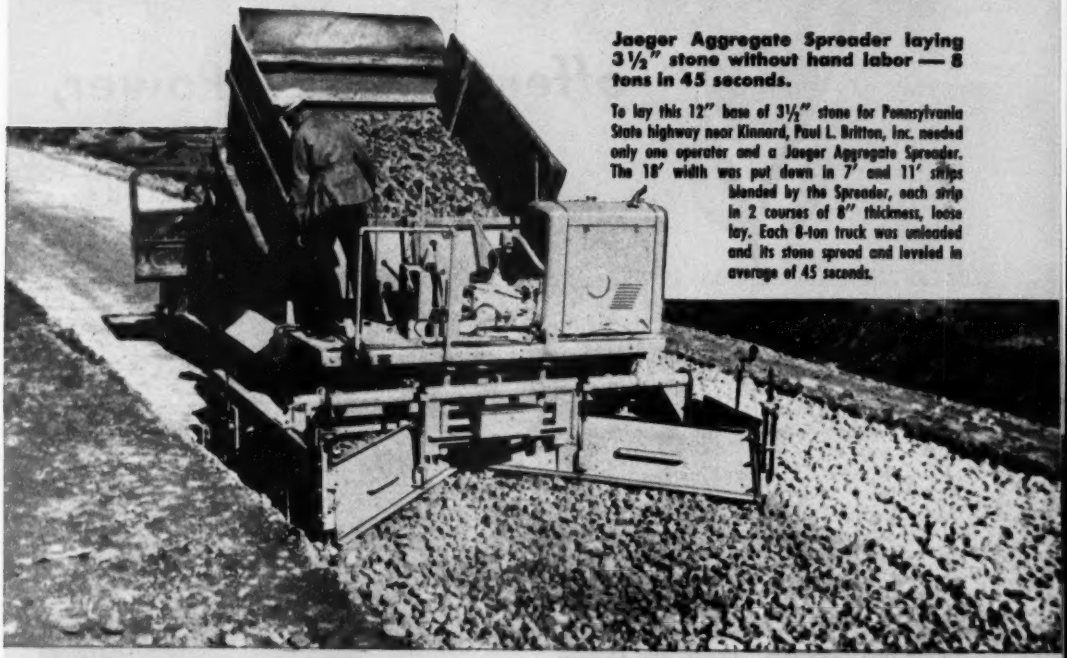
More Efficient Cooling is due to less heat rejection in the combustion chamber. More heat is turned to power. More coolant flows around valves and bore. Water jacket completely surrounds cylinder. With *less coolant* this new engine *has better cooling* —a more compact, efficient, over-all cooling system!

These are only a few of the important developments made in Chrysler Industrial V-8's. There are many more. *These* engines will give you a whole new conception of Industrial power. Ask a Chrysler Industrial Engine Dealer to explain their advantages on your jobs, or write us direct for full information. **Marine and Industrial Engine Division, Chrysler Corporation, 12200 E. Jefferson Ave., Detroit 31, Michigan.**

*Model IND-20

CHRYSLER
Industrial Engines

7 WAYS TO MAKE MONEY
with high production, labor-saving JAEGER tools



Jaeger Aggregate Spreader laying 3½" stone without hand labor — 8 tons in 45 seconds.

To lay this 12" base of 3½" stone for Pennsylvania State highway near Kinnard, Paul L. Britton, Inc. needed only one operator and a Jaeger Aggregate Spreader. The 18' width was put down in 7' and 11' strips blended by the Spreader, each strip in 2 courses of 8" thickness, loose lay. Each 8-ton truck was unloaded and its stone spread and leveled in average of 45 seconds.

Jaeger Paver-Type Aggregate Spreader, costing only half the price of bituminous pavers, offers unequalled economies in laying all types of base and surface aggregates, plant-mixed stabilized soil or free-flowing bituminous mixtures. Can lay up to 10" thickness of coarse stone or 12" of fine or graded materials in widths to 11', or lay lesser thicknesses up to 12½', in one pass.

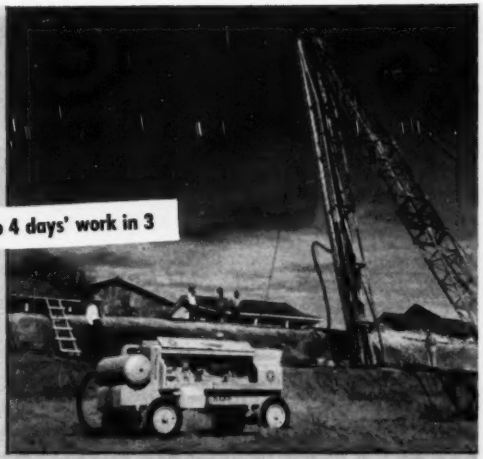
Straightedge runners, which carry the strike-off, insure the accuracy required for highway, street and airport base, and the base and top of secondary roads, parking areas and drives. Crawler traction is entirely on the subgrade, avoiding displacement of the loose material. Machine can lay flush to curbs or headers and blend joints. Two models, to work with any size trucks you use.

Labor-saving concrete paving with "3-screed team"

Jaeger Screw-and-Screed Spreader: The only spreader equipped with a re-mixing screw and, for high production work, a 12" oscillating screed which accurately meters material for the finishing machine. No costly carry-back, no high or low spots; always uniform compression under the finisher screeds. Can also spread and finish concrete base for streets.

Jaeger Diagonal Screed Finisher: Completes today's "3-screed team." Equipped with transverse front screed followed by diagonally adjustable rear screed which works material up-hill on pitched slab and super-elevated curves and compacts it flush against the higher form. Saves hand labor, finishes faster without tearing, produces a smoother surface.

"Air Plus" Compressors do 4 days' work in 3



Jaeger "2-Breaker" Model 125 makes 105 ft. compressors obsolete. This trench job with 2 heavy duty breakers moved 40% faster because Jaeger's 125 cfm of air at 100 lbs. held steady full pressure behind the tools, instead of a "loafing" pressure of 70 lbs. at which tools are inefficient.

"Air Plus" Model 600 efficiently powers a heavy 9B-3 hammer. Jaeger was first to build a 600 ft. compressor needed to operate a big pile hammer, or 2 heavy duty wagon drills, effectively. Other Jaeger "new standard" sizes — 75, 125, 185, 250 and 365 cfm — offer comparable advantages.

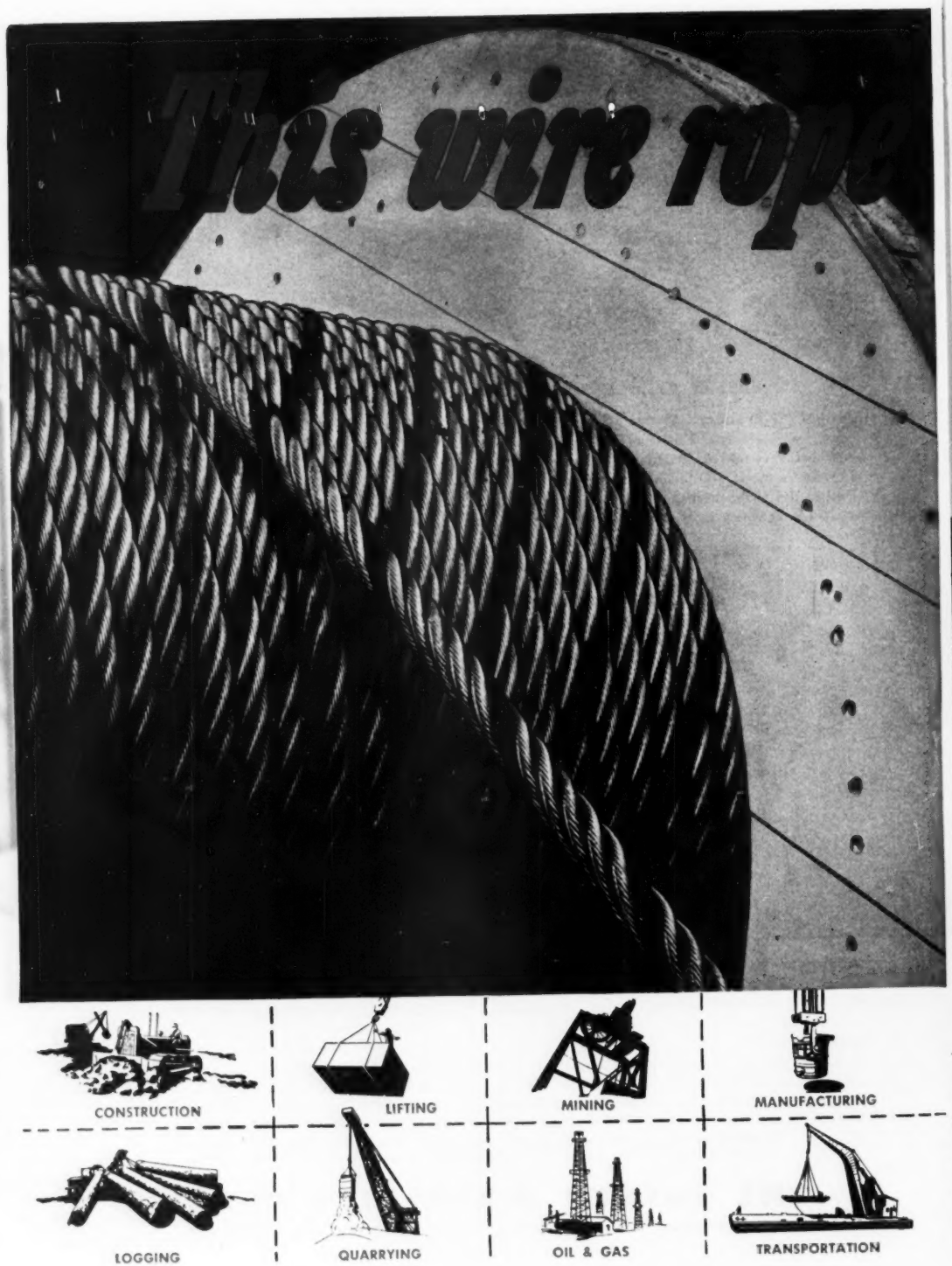
A Jaeger Never Races to Prime: During 3 years' constant service on cofferdam work, these "Sure Prime" pumps often operated non-stop for months, at times repriming every minute at 20' suction lift, *and never ran faster than 1200 rpm.* Compare this performance, and resulting long life of Jaeger pumps and engines, with other pumps that must race at 2000 rpm to meet the same conditions.

Jaeger Mixers for Big Yardage: 5 to 7 seconds charging with Jaeger's automatic Skip Shaker loader, and equally fast discharge with the extra big bucket and flight blades of the Jaeger "dual mix" drum, shortens each mixing cycle, gains time for more batches. Machined steel drum track, Timken bearing rollers and heavy duty transmission insure longest life, free from breakdowns on the job.

There are Jaeger "service stations" in 133 cities — always near your jobs. See your nearest Jaeger distributor for sales, rentals, service — or write us for complete catalogs.

THE JAEGER MACHINE COMPANY

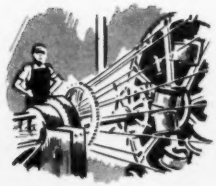
800 Dublin Avenue, Columbus 16, Ohio • Cable BIGANLITLE


This wire rope
CONSTRUCTION
LIFTING
MINING
MANUFACTURING
LOGGING
QUARRYING
OIL & GAS
TRANSPORTATION

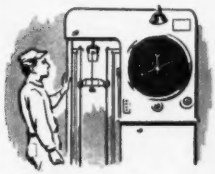
must deliver...

because "We always strive to make HERCULES *Red-Strand* Wire Rope *better than we claim it to be...*"

This is a primary principle of Leschen manufacture. It *must* give you Red-Strand wire rope that wears exceptionally long . . . delivers top tonnage. It *must* give you Red-Strand wire rope that saves workers' time . . . earns their complete trust.



You get manufacturing craftsmanship when you use Hercules* Red-Strand wire rope. Leschen management and workmen know wire rope inside and out — *it's their only business.* They know how to make it better. Generations of the Leschen family — and workmen's families — take pride in producing a product that will serve you better.



You get exactingly tested wire rope when you use Hercules Red-Strand. Every coil of wire that goes into Leschen rope is rigidly torsion- and tension-tested. Every rope is double-checked for accurate fabrication — diameter, length of lay, strand clearance, lubrication. During World War II, millions of feet of Leschen wire rope passed every test by the Armed Forces *without a single reject.*

You get individual attention to satisfy your exact needs. Every executive, representative and workman in the Leschen organization follows this 95-year-old policy. Records are kept on every length of wire rope made in the Leschen mill — to provide rechecks on every installation — and to help you get the best type and grade of wire rope for your specific application.

Try Hercules Red-Strand wire rope. *Keep comparative records.* You'll *experience the difference.* Next time, specify . . .

PREFORMED • ROUND STRAND • FLATTENED STRAND • NON-ROTATING • LOCKED COIL • SLINGS

LESCHEN WIRE ROPE

*Reg. U.S. Pat. Off.

A. Leschen & Sons Rope Co., St. Louis 12, Missouri

In business only to make wire rope — better wire rope — since 1857

DISTRIBUTORS IN ALL PRINCIPAL CITIES

SPEED UP THE JOB . . . BUILD UP YOUR PROFITS

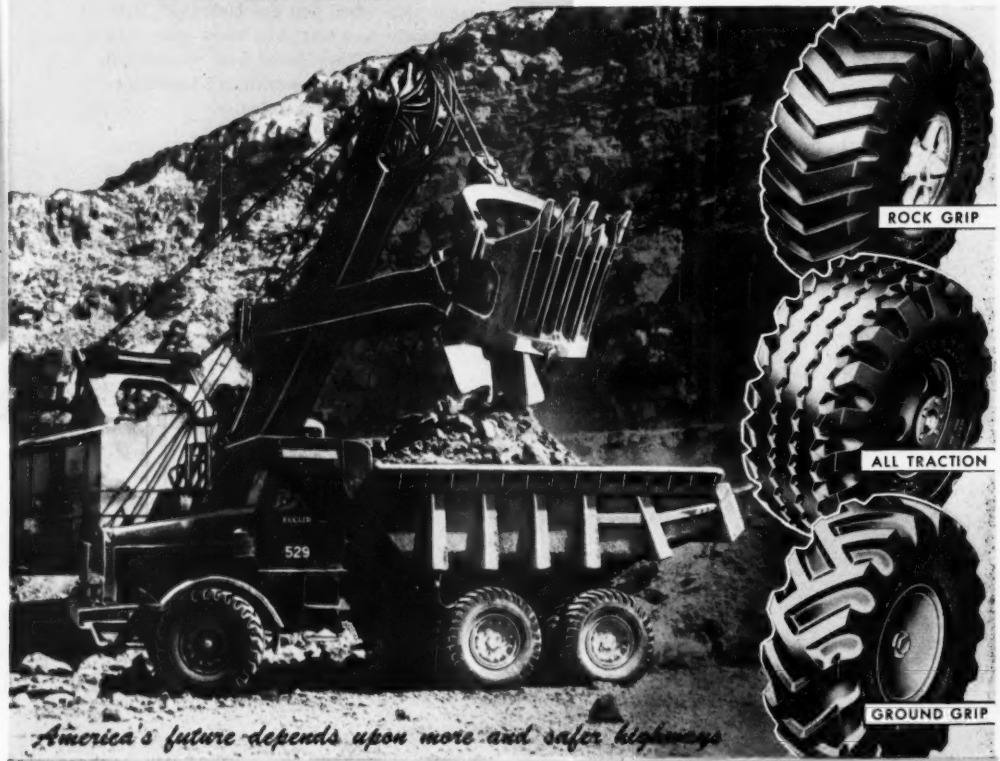
with

Firestone TIRES

WHETHER you make or lose money on many jobs depends on tire performance . . . in rugged rock work, strip mining or heavy earth moving, you need tires specially designed and engineered to withstand torturous abuse.

Regardless of how big or how tough the job, Firestone has a tire that will meet your particular requirement. *You get more for your money with Firestone tires because there is more built into them.* The cut-resistant treads are extra thick and extra tough. The Gum-Dipped rayon cord bodies are reinforced with four extra impact plies. Sidewalls are double-thick, cut and snag-resistant. You get a Lifetime Guarantee with every tire.

Your Firestone Representative can show you how the right Firestone tire will cut your downtime and build up your profit. Let him show you.



WHEN YOU BUY NEW EQUIPMENT OR REPLACEMENT TIRES SPECIFY FIRESTONE

Enjoy the Voice of Firestone on Radio or Television Every Monday Evening over NBC

Copyright, 1952, The Firestone Tire & Rubber Co.

THIS IS THE DIESEL

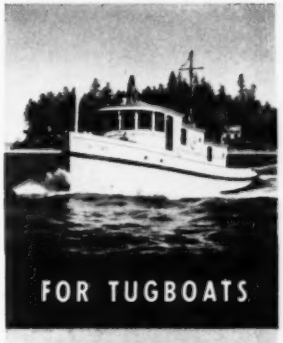
for any job from 32 H. P. up

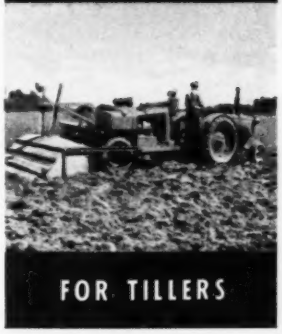
When it comes to *pulling power*—and that means *paying power* in tractors, tugs and tillers as well as trucks—the General Motors 2-cycle Diesel is in a class by itself.

This engine's high torque output and rapid acceleration enable GM Diesel powered equipment to outpull and outwork other machines in *applications from 32 H.P. up.*

Producing power at *every* piston downstroke, instead of every other downstroke as do 4-cycle Diesels, the GM Diesel is smoother running, faster accelerating and more powerful for its size. It fits in approximately the same space as industrial gasoline engines of comparable horsepower—*and produces more power from less fuel!*

Ask your GM Diesel distributor to tell you how *this* Diesel can step up your production and cut your costs on mobile, portable or stationary installations.





DETROIT DIESEL
ENGINE DIVISION
GENERAL MOTORS • DETROIT 28, MICHIGAN

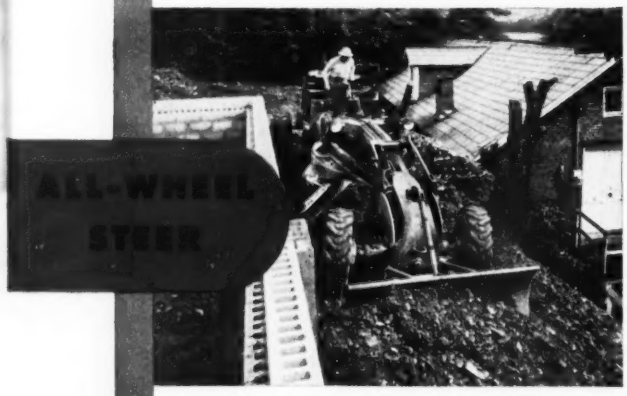
Single Engines . . . 32 to 275 H.P. Multiple Units . . . Up to 800 H.P.

GM
GENERAL MOTORS
DIESEL POWER

Like Mules and Canyon Trails . . .

they Go Together

Power in the front drivers makes it safe to bulldoze headfirst down a steep slope . . . easy to back-up for another load.



Starting to straighten out after making the turn . . . rear steer keeps its end of the Grader out of danger.

Yes, All-Wheel Drive and All-Wheel Steer go together . . . work together . . . on every job. Take the matchless traction and power-at-the-blade of All-Wheel Drive; add the superb maneuverability of All-Wheel Steer and you get Controlled Traction, which moves more material . . . of any kind . . . farther and faster.

Why be satisfied with less in a motor grader?

AUSTIN-WESTERN COMPANY · *Subsidiary of Baldwin-Lima-Hamilton Corporation* · **AURORA, ILLINOIS, U.S.A.**

Austin-Western

BALDWIN BLH LIMA-HAMILTON

Another Way to Cut Costs with Homelite *Carryable* Generators

One man, with a high cycle concrete vibrator can do as much work per hour as several men with an ordinary vibrator.

And where do you get the electric power to operate a high cycle vibrator? Easy! . . . from a Homelite Dual Purpose Generator. With this small, compact, gasoline engine driven generator . . . easy to carry and quick to get on a job . . . you can operate not only high cycle vibrators but all the other new high cycle tools that are rapidly being accepted for their greater efficiencies. What's more, with this same generator you can operate your standard 110 volt power tools, as well as floodlights.

To any contractor with an eye to more production per man hour and lower building costs, this Homelite Dual Purpose Generator is a natural. Write and we'll gladly demonstrate.

CARRYABLE
PUMPS • GENERATORS •
BLOWERS • CHAIN SAWS

PERFORMANCE · DEPENDABILITY · SERVICE

HOMELITE
CORPORATION
1006 RIVERDALE AVENUE • PORT CHESTER, N. Y.

"another TALBERT

TALBERT Mobile Crane-Mount

NOT A TRUCK—

NOT JUST A CRANE—

- Axle Loadings: 18,000 lbs. each with counterweight and head section of boom removed.
- Overall Width: 10 ft. (15 ft. with outriggers extended).
- Overall height: 12 ft. 9 in. to top of cab.

Owners and Manufacturers: We can make this mount to fit your specific requirements. The TALBERT Mobile Crane-Mount can be supplied in 10 to 100 ton capacities.

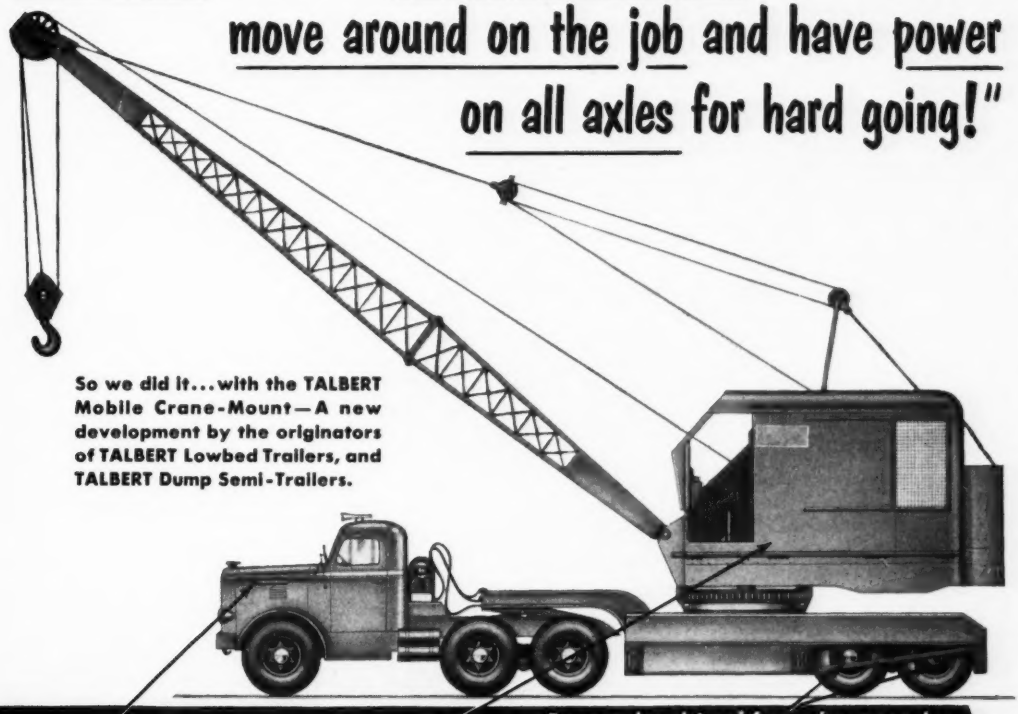
TALBERT CONSTRUCTION EQUIPMENT

7950 West 47th Street • Lyons, (Chicago Suburb)

first!"

THE MAN SAID:

"I want a 40 ton crane that can be easily moved to the job without taking it all apart. I want it to move around on the job and have power on all axles for hard going!"



So we did it...with the TALBERT Mobile Crane-Mount—A new development by the originators of TALBERT Lowbed Trailers, and TALBERT Dump Semi-Trailers.

Adaptable to any crane super-structure.

Rear axles driven from the crane by crane operator for hard going.

Your present equipment can provide front end power.

* PATENT PENDING

COMPANY
Illinois

Crane Manufacturers and Crane Users: (New or used cranes)

Write us for particulars. We build these mounts for any make of crane.

I am interested! Please send me further information on the TALBERT Mobile Crane-Mount!

Name_____ **Title**_____

Company_____

City_____ **Zone**____ **State**_____

PICTURE OF THE MONTH

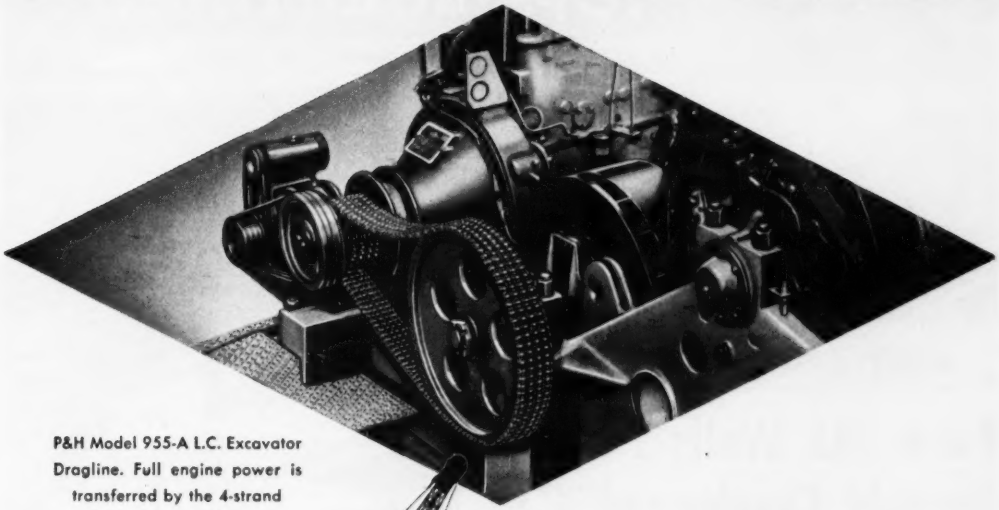
CONSTRUCTION METHODS AND EQUIPMENT

Graders Hit the Road

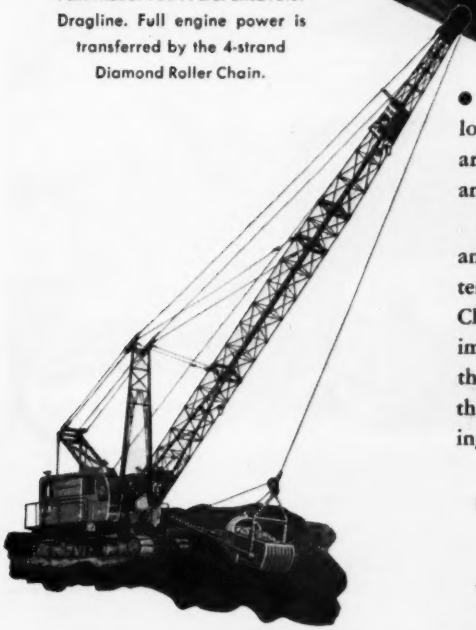
IT IS INDIAN-FILE for five Adams motor graders in Colorado as they recondition a bituminous road. Colorado's highway department uses nine graders per crew for this work. Seven have 12-ft blades and scarifiers. Two graders are equipped with heavy-duty disks, 8 ft long with 22-in. blades, mounted on the moldboard brackets. Scarifiers rip up the old mat, and the disk units follow to break it down. Material then is passed back and forth across the road with moldboards, and the disks keep chopping through until it is ready for re-use. After the road base has been shaped up and repaired, hot road oil is shot into the mat material and the aggregate once more passed across the road for a thorough mixing. Then the road surface gets a tack coat of oil, and the graders begin replacing the mat. Compaction is by a wobble-wheel roller, assisted by road traffic that is kept passing through the job at all times. A crew reconditions 1 mile a day.

Where only the best will do ...

DIAMOND ROLLER CHAINS



P&H Model 955-A L.C. Excavator Dragline. Full engine power is transferred by the 4-strand Diamond Roller Chain.



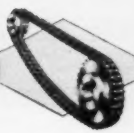
● Where only the best will do, high efficiency, long-life, uniform quality Diamond Roller Chains are the choice of leading equipment manufacturers and contractors.

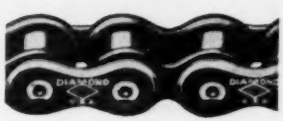
Experience has shown that lower operating costs and higher yardage output depend to a great extent upon dependable, economical Diamond Roller Chain power transfer. Minimum maintenance, minimum down time, and maximum service life under the most severe conditions is the matchless reputation that Diamond Roller Chains have earned by serving the construction industry for the past 40 years.

DIAMOND CHAIN COMPANY, Inc.
Dept. 418, 402 Kentucky Avenue, Indianapolis 7, Indiana

Offices and Distributors in All Principal Cities

Refer to the classified section of your local telephone directory under the heading CHAINS or CHAINS-ROLLER

DIAMOND  ROLLER CHAINS



Fast Job Starts... LOWER COSTS

with UNI-FORM Panels

"TOPS" in CONCRETE FORMING

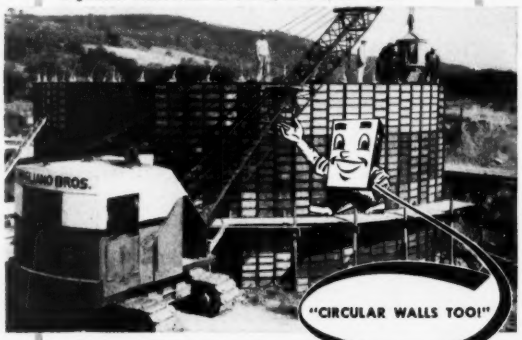
Elmira Sewage Treatment Plant, Elmira, New York
General Contractor: Corigliano Brothers, Ossining, New York
Engineers: Nussbaumer & Clarke, Buffalo, New York

Form ALL Walls . . . . Straight, Circular and "Y" with ONE System!

- FASTER JOB STARTS . . . UNI-FORM Panels are ready to use when they reach the job.
- AUTOMATICALLY ACCURATE . . . Simple mechanical assembly
- EASIEST FORM ERECTION . . . Lock into rigid, integral unit
- MINIMUM ALIGNMENT and BRACING . . . Required on 1 SIDE ONLY

SAVE TIME . . . LABOR . . . MATERIAL

Write today for full details on Universal's "Sewage Treatment Plant Concrete Forming Package"... UNI-FORM Panels, "Y" Wall Forms, FREE Engineering and Field Service. It's designed to make money for you!



Standard UNI-FORM Panels form the aeration tank. Alignment and bracing on *inside only* give clean, safe outside working area.

UNIVERSAL
FORM CLAMP CO.
Concrete Form Specialists Since 1912

GENERAL OFFICES AND FACTORY
1238 N. KOSTNER • CHICAGO 51, ILLINOIS

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Service Wherever You Build . . . Coast-to-Coast

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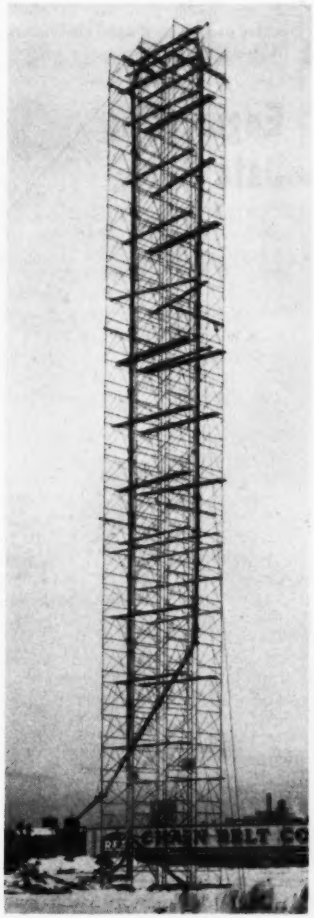
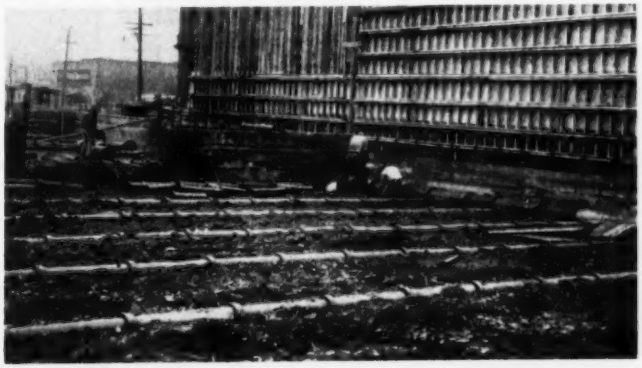
Construction News in Pictures . . .

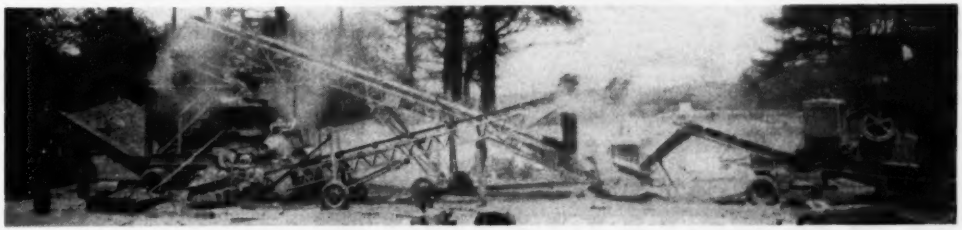


SCAFFOLD TOWER — Nope, it's not a rocket-launching tower. This 100-ft Safway Scaffolding sends concrete skyward as a means of testing Rex Pumpcrete machines. Standard scaffold frames are used; base measures 14x10½ ft.

CRUSHED — Crawler crane goes down in defeat after attack by an adjacent concrete retaining wall 30 ft high, in Boston. Details of the accident are not available, but no one was injured—in spite of the fact that the area has been a favorite play site for children in the neighborhood. This costly mishap is yet another reminder to contractors that they must be safety-minded at all times.—United Press photo



ANTI-FREEZE EQUIPMENT — More than 5,000 ft of vitrified clay pipe, ranging from 6 to 18 in., become part of an air circulation system under a basementless cold storage building in San Francisco, to keep the ground from freezing. Most of the pipe is laid with dry joints in crushed rock. After covering with 1 ft of crushed rock, a concrete slab is poured over the area followed by a layer of cork and the finished floor. Air at normal outside temperatures will be circulated through the clay pipe ducts.



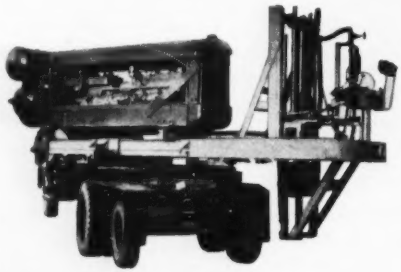
BUSY FOR THE COUNTY — Portable crushing and screening plant assembled and operated under the direction of Jess Tibbetts, Tillamook County, Ore., road master, averages 500 yd in a 7-hr day. At the left is a 3-ft TY Traylor reduction crusher, and at the right a 25x40 Cedar Rapids breaker. Handy crusher units, conveyors and screens that make up plant can be set up close to the work underway and require little maintenance—although used for crushing stone, both for road construction and oiling.

NO BREAKING OR TAMPING JOB TOO LARGE OR TOO SMALL

MIGHTY MIDGET

Models for either 105' or 160' C.F.M. Highly adaptable to trench breaking, patch work and inside work—very efficient in cutting a true line. Pulls its own compressor and can be handled by one man. For fast, low cost breaking or tamping, use the Mighty Midget.

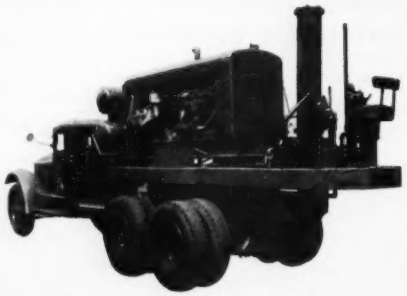
SEMI-HEAVY DUTY



This versatile machine is equipped with elevating devices to lower hammer assembly into a trench to a depth of 6' for tamping—can be raised instantly to height for breaking slab concrete. Will cut a width of 10'. Can be mounted on any 3-axel two-ton truck, equipped with compound low. 210' C.F.M. will handle at 60 blows a minute.

HEAVY DUTY

Breaks all types of pavement much faster, and at a lower cost than any other known method. 35,000 to 50,000 sq. ft. a day, 6" non-reinforced concrete; 25,000 to 35,000 sq. ft. a day, 8" non-reinforced concrete. 315' C.F.M. Compressor and 90# pressure. Can be mounted on trucks having 4-ton or more capacity.



For complete information, write Department CM.

R. P. B. CORPORATION

2751 E. 11th Street, Los Angeles 23, Calif.

JOB TALK . . . Cont. from p. 20

man reactions in potential-accident situations and specific action by industry, which also has an economic stake, as well as human considerations, in accident reduction.

Engineering Data Book

REVISED EDITIONS of the Data Book for Civil Engineers (by Elwyn E. Seelye; Vol. I, Design, $10; Vol. II, Specifications and Costs, $13; published by John Wiley & Sons Inc., New York 16, N.Y.) are now off the press. The author states that the prime purpose of the Data Book is to furnish an engineer with sufficient data so that he can design any civil engineering work without other reference books. This, we feel, he has accomplished admirably well.

As a matter of fact, there is nothing like these data books in engineering literature. While they are what we prefer to call a concise professional notebook, they have the advantage, because of their wide range of subjects, of making entertaining reading for the specialist in other fields. A foundation designer can browse and, in effect, peer over the shoulder of the airport or highway designer.

The second editions are specifically geared to the needs of the busy man. For example, there is a wider range of summary theory that gives the engineer a quick reference for problem solution. Both of these fine volumes have been prepared with meticulous care, and the material is presented in an attractive manner, making them definite contributions to engineering reference literature.

If it were possible that these volumes could be published in smaller sizes, they would have greater use. We are thinking primarily of the heavy construction design engineer and estimator who requires reference books that can be comfortably packed in a briefcase. Of course, to accomplish this with these volumes would interfere with the usability of certain of the sections, particularly in regard to nomographic charts, where reduction in size would interfere with convenience. Otherwise, we heartily recommend these valuable and handsome works for any designer's library.—**G.F.F., Jr.**

Digs hard clay fast!

Powerful LS-85 hoists and swings simultaneously!

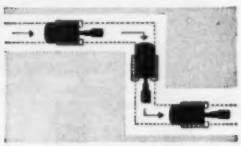
92 NET H.P. is developed at full load speed by the diesel engine of this Super ¾ yd. LS-85! The high amount of engine power is responsible for packing more digging force behind the bucket teeth. Also, that's why the LS-85 cuts so smoothly through hard clay and why it hoists and swings the load without a pause!

T2.846-A

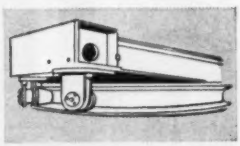
Here are LINK-BELT SPEEDER PLUS FEATURES that work for you

All-Welded Construction — Extra strength without extra weight. Resists impact and twist. Field service simple, fast.

Gooseneck Trench Hoe—improved digging and dumping plus far less undercutting of the machine on deep cuts.



Turns on a Dime. Either track can drive or be locked independently. Digging lock controlled from cab.



Hook Rollers — Cone-shaped for *true* rolling. Reduce roller and roller path loads—eliminate center pin pull.

LINK-BELT SPEEDER
CORPORATION
Builders of the most complete line of shovels, cranes and draglines
CEDAR RAPIDS, IOWA

IS YOUR BUSINESS WASTING MONEY BY THE TRUCKLOAD?

Only White

provides the Extra Earning Power of

SPECIALIZED DESIGN

A MISFIT TRUCK wastes time and money anywhere in the construction industry. Over its life, it can waste many times its original cost.

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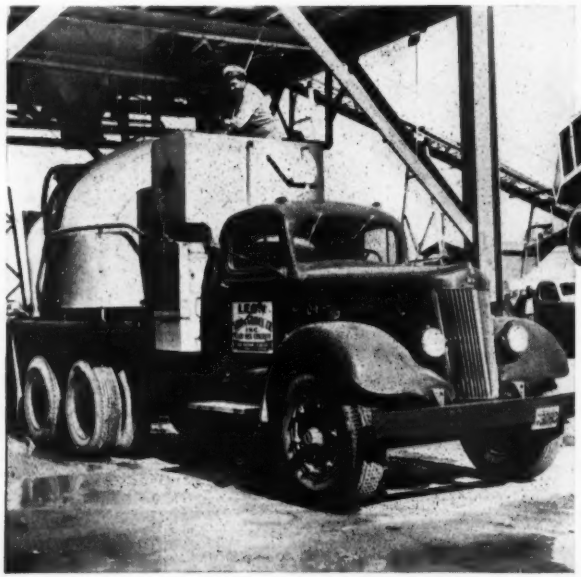

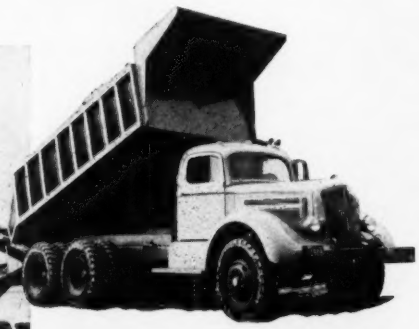

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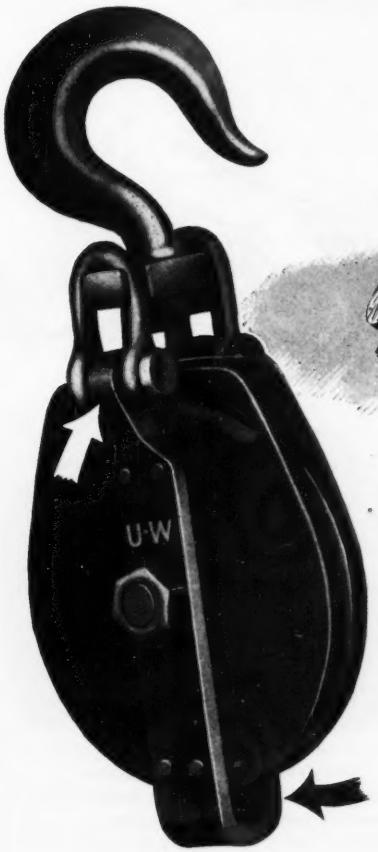

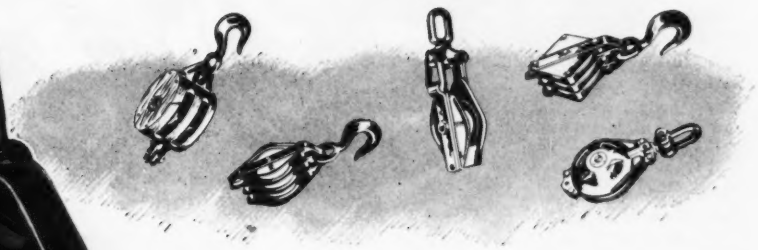

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THE UPSON-WALTON COMPANY
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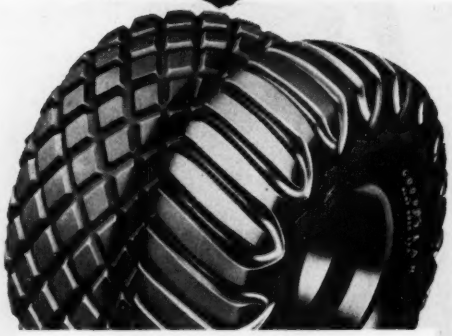

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Volume 34
Number 6

CONSTRUCTION METHODS AND EQUIPMENT

JUNE 1952

Harold W. Richardson, Editor

Project Adequate Roads

THOUGH TWENTY YEARS late, at last a coordinated nation-wide campaign for a suitable highway program has been launched under the title Project Adequate Roads. Sparked by the National Highway Users Conference, PAR includes some forty organizations interested in promoting good roads. A national PAR committee has already been established with members from each participating group. State and regional committees are in the making.

Here is a movement contractors should back in full force, something they can really take hold of and push. Contractors are in a position to offer invaluable aid to the PAR program because of their constant contact with the public, and with municipal, county, state and national highway officials. Then, too, they are intimately acquainted with local and regional highway conditions and needs.

PAR's major objective is to stimulate correction of highway deficiencies, wherever they may exist—and that's everywhere. This objective will be achieved by arousing public and official understanding of the importance of good roads in the national economy, and by pushing a continuing program of highway improvement in all states based on needs as established by factual studies.

In the original concept, PAR is set up merely as a coordinating agency, not as a national spokesman for the participating groups. Each participant would still operate in its own way as in the past, singing its own song. And no national or local dues are anticipated, but the various cooperating agencies would contribute by furnishing personnel, as needed for the national and local committees.

We disagree with this premise. These organizations, all interested in highway promotion, have been in existence for years. Yet our roads are in the worst mess since the last nation-wide coordinated effort of 35 years ago to get the country out of the mud. Traffic problems are the worst in history; the traffic muddle daily grows more exasperating.

No, what this nation needs in its hour of traffic travail is a single, powerful voice representing all highway and highway-user interests. A voice sufficiently powerful to bring pressure where pressure is needed to accomplish a project of adequate roads. Pressure is a distasteful word, denoting distasteful action. But in no other way than by exerting powerful pressure can the country be jolted out of its lethargy regarding highways. All past efforts of separate organizations have failed to produce highways to meet present traffic needs. The present road situation is mute testimony to that fact.

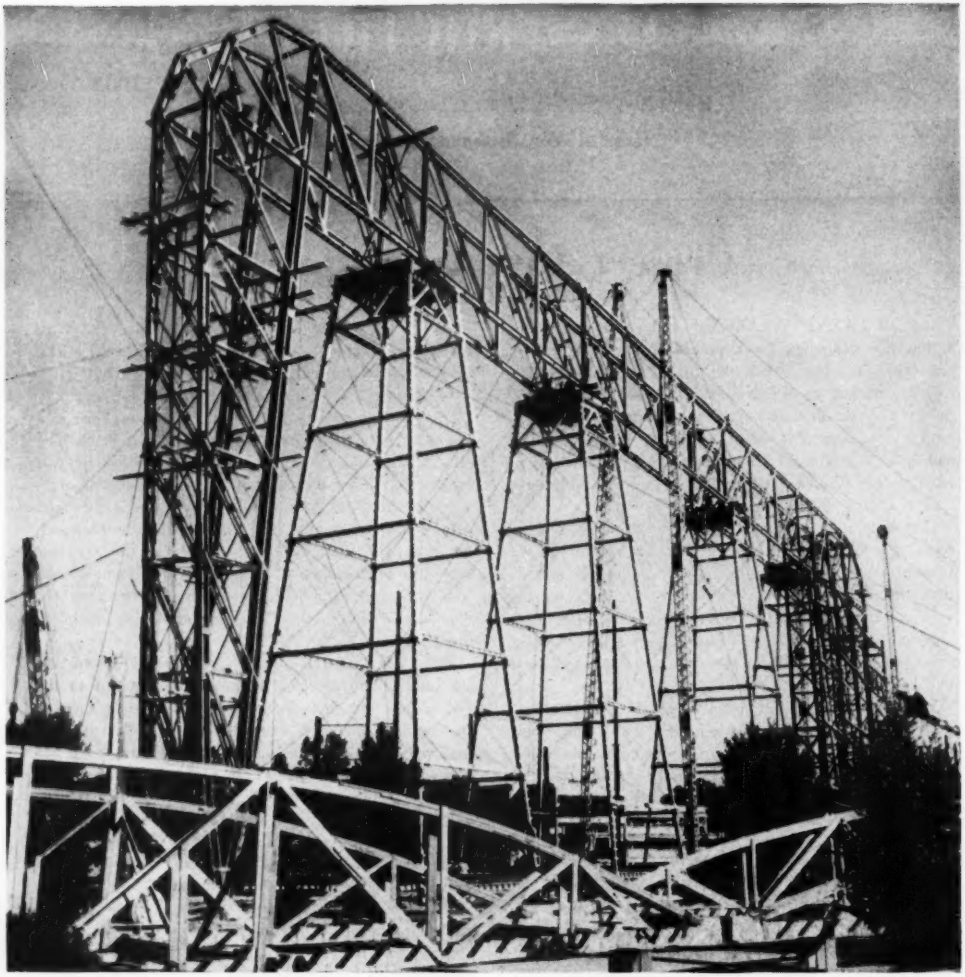
Educating the public, and especially the highway users, to win support for an adequate road program is the first and most important job facing PAR. The car and truck owner must be made to realize he will have to pay more than ever before for the use of highways, if he is to have the roads he needs for safe, comfortable transportation. But educating a harassed, fender-dented, traffic-bound car owner on the need for better roads shouldn't be too hard a job. He now risks life, limb and car every time he pokes his nose out of his own driveway. Minimizing that risk ought to appeal to him.

The PAR Committee studies will reveal the cost of adequate highways. But it can also point out to the public how this financial burden would be lessened if the public demanded that all moneys collected from highway users be spent on the road program. All too many states are diverting gas taxes and license fees to other purposes. The government reluctantly returns as federal aid but a small part it collects in automobile, gas, tire and oil excise taxes. New road construction would ease the current financial drain of trying to maintain our system of outmoded paved cow paths.

PAR expects to establish highway needs through sufficiency ratings of present and proposed roads. These ratings, based on a simple formula, would indicate the magnitude of new construction or improvements necessary to serve *present* traffic adequately. This procedure would be satisfactory only if the program were continually carried forward. The curse of our highway system is that we never have designed or built beyond current needs—so we have never caught up with the demand. Highway transportation has ever expanded faster than highways. Almost every new highway facility is overloaded as soon as opened. Let's spend a little more money and overbuild at least some of our new highways and see if we can keep up with the demand even if we can't stay ahead.

Project Adequate Roads offers a great opportunity to modernize our highways and to get the nation out of its terrible traffic muddle. Come on, you contractors, help organize state PAR Committees for your own good and as a great public service.

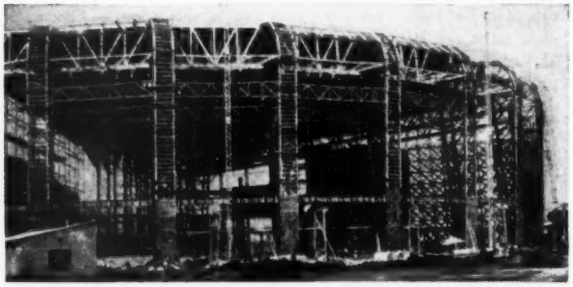
Rich



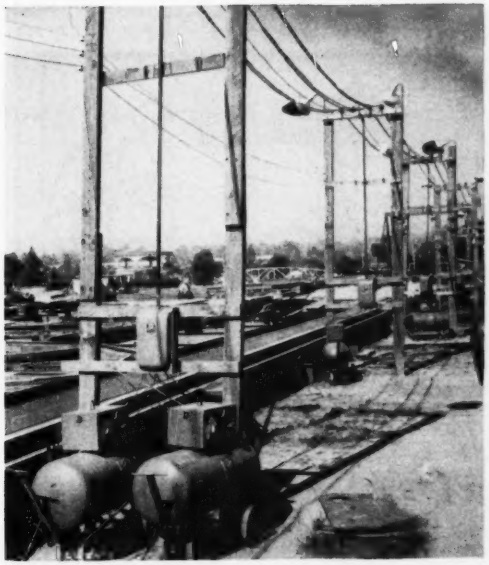
LONGEST WELDED SPAN ever erected, 328 ft, nears completion at Mexico City municipal auditorium. This is first of eight similar units that will fan out from stage end to cover unobstructed seating area. Frames are double trusses, prefabricated on ground in sections and raised to timber falsework by gin poles for final welding.

They Weld 'Em Big South of the Border

By CHARLIE HERBRUCK
The Lincoln Electric Company, Cleveland

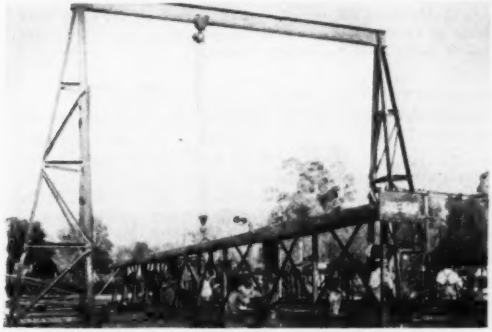


FRAMEWORK of fan-shaped auditorium is now complete and walls are being filled in. Gin poles erect steelwork for the walls.

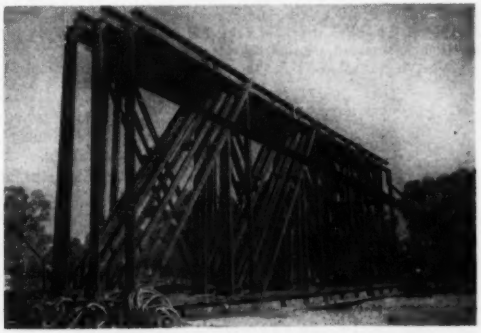


PREFABRICATION AREA is ringed with timber towers carrying power lines and floodlights. The Lincoln 400-amp welding machines can be plugged in at any bent.

ERECTION STARTS with welding up foot assemblies into which frame legs are pinned. Base weldments are handled by chain hoist from triangular mast to facilitate down-hand welding.



A-FRAME SET-UP permits all structural welding to be done in down-hand position. Here one of double-lattice columns for sidewalls is being prefabricated in sections.



PREFABRICATED TRUSS SECTIONS ready for hoisting to final position. Note wide flange chord sections and open web bracing, designed to reduce structural weight.

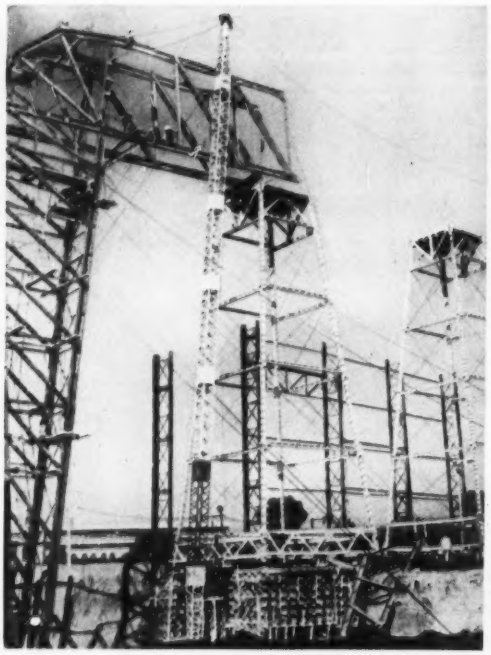
WITH STARTLING boldness and ingenuity the Mexicans are welding eight rigid frame trusses into a spectacular fan-shaped framework for a new 18,500-seat municipal auditorium at Mexico City. Towering 120 ft, these trusses span from 295 to 328 ft, and are believed to be the longest all-welded spans ever erected. The rigid frames are box trusses supported at the base by 9½-in. nickel steel pins fitted into a welded clevis built up of 2¾-in. plate.

Because of poor subsoil, lightness was essential in the building. Estimates indicate that by the use of welded construction and a special type of beam section, savings of more than 50% in weight were achieved over conventional riveted design with standard structural sections.

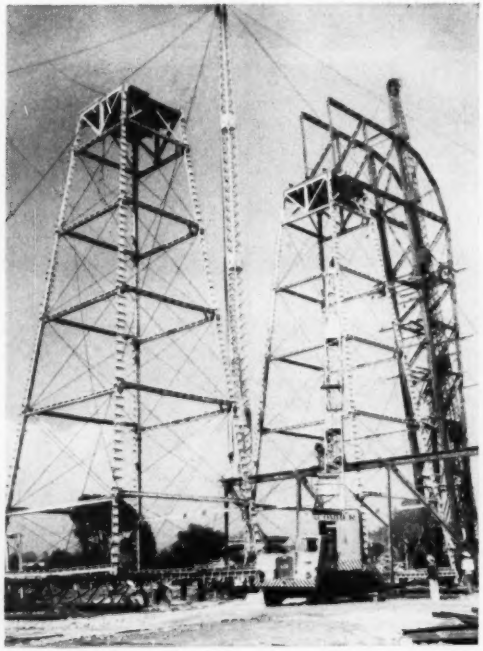
Steel fabricator, erector and welding contractor is Macomber & Co. which has pioneered welded building design since 1928. Moving into the Mexican territory 5 yr ago, Macomber de Mexico, S.A., has demonstrated considerable ingenuity in developing field welding techniques and in devising lighter weight steel sections for columns, bracing, trusses and joists.

The eight truss frames nest together at the stage end and fan out to give the circular arrangement of columns at the front or gallery end. Angle of the sidewalls is 72 deg. These two walls are framed by six double-lattice columns, built up in the field by welding and varying in height from 100 to 120 ft. Columns are anchored at the base and hinged at the top to horizontal trusses connecting to the outside main truss. Main trusses are connected to each other by joists to support a wide rib steel deck type of roofing.

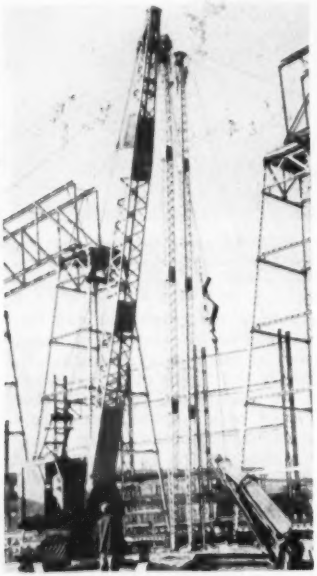
The rear or stage end of the structure connects to a five-story 240-ft building framework which



SINGLE GIN POLE erects rigid frame legs and first section of double-truss box span structure. Falsework towers are timber. Steel towers in background are wall columns.



TRUSS SECTION for second span is shifted by Bay City truck crane to hoisting position for lift by gin pole to top of falsework towers, where it will be welded in place.



DOUBLE GIN POLES are in position to raise center span trusses to place, while truck crane hoists first section of adjacent frame leg to position for pinning to base.

will house wardrobes, properties, services, offices and other accessory facilities.

The interior naturally is completely unobstructed, and at the rear are three tiers of balconies. Behind them is the gallery area, framework of which is connected to the truss columns through hinges in such a way that no moment is produced on the columns, but at the same time, reinforcement is provided to withstand dynamic loads.

Prefabrication at Site

Macomber developed a neat system of prefabrication of sub-sections on the site, and an erection scheme utilizing 130-ft gin poles and a truck crane. For erection the structure was handled in sections up to 70 ft long, weighing from 9 to 15 tons each. The frame columns and knee sections were put up first, to which were raised and welded the horizontal frame sections.

Gin poles and hoists, well over 130 ft high, lifted the welded sections in place for erection welding. Between the columns, and rising to the level of the lower beams of the span, were built four temporary timber falsework towers, on which sections of the span, welded on the ground, can be held for welding into the single rigid frame. A network of guy wires helps hold components steady while splice welds were made and windbracing installed. End sections of the truss, weighed 18 tons per side, center sections 20 tons per side, columns, 120 tons each, bringing total weight to 360 tons.

Some twenty Lincoln Electric 400-amp dc generators are required for the field work. Welding rod is standard Fleetweld No. 5 and 7 corresponding to A.W.S. E-6010 and E-6012. The 6,000 tons of structural steel involved is Mexican, produced to A-7-49 structural steel standard.

Owner of the auditorium is Obras Publicas de Department Federal Mexico DV; architect, Fernando Beltran y Puga; and contractor, Cia Constructira Internacional S.A. The auditorium, located in the picturesque Lomas section of the Mexican capital, will be completed this summer, just too late to accommodate the Rotary International convention, held in May, as originally planned for.

As It Was in the Beginning

by DAN BURKE & DAVE HARVEY

Dirt Built the Great Pyramids

HISTORIANS AND ENGINEERS HAVE FOUND THAT THE EGYPTIANS BUILT HUGE DIRT RAMPS, GRADUALLY SLOPING UP THE SIDES OF THE PYRAMIDS, SO THAT THEY COULD SKID 2½-TON BLOCKS TO THE TOP. THE GREAT PYRAMID STOOD 480 FT. (48 STORIES) HIGH.

MILLIONS OF YARDS OF DIRT WERE MOVED IN BASKETS AND BAGS TO BUILD EACH PYRAMID. CONTRACTOR KING CHEOPS USED A SLAVE LABOR FORCE OF 100,000 MEN FOR 20 YEARS LAYING A BLOCK EVERY 2½ MIN., 300 A DAY OR A TOTAL OF 2,300,000 BLOCKS.

APPROXIMATELY 10 BILLION MAN HOURS WENT INTO ONE PYRAMID.

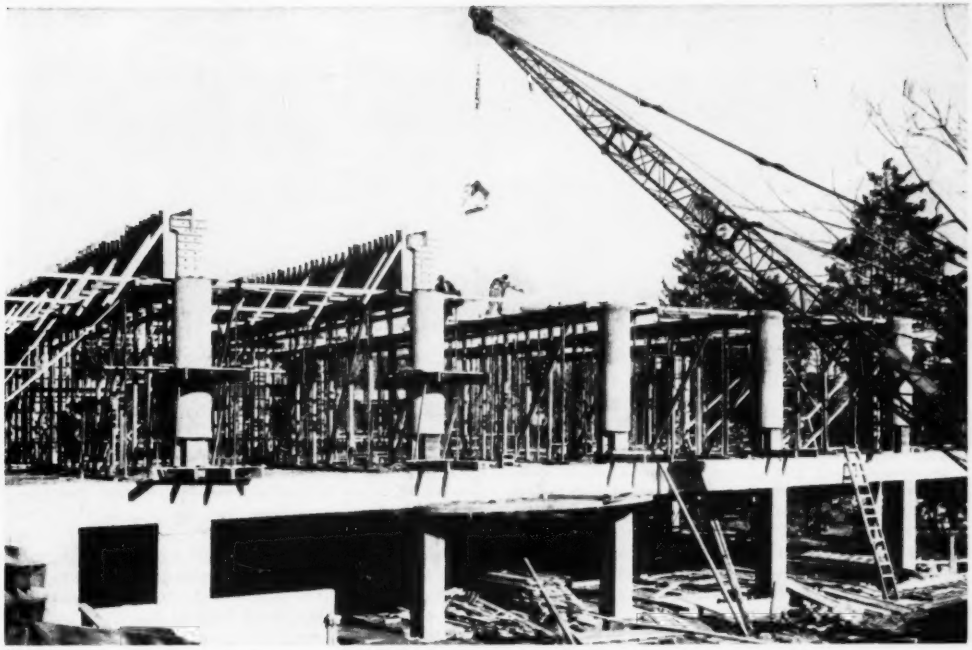
This first of two stages of cable tensioning in cast-in-place members helps...

Shallow Prestressed Girders Span 65 Feet To Save 89% of Steel

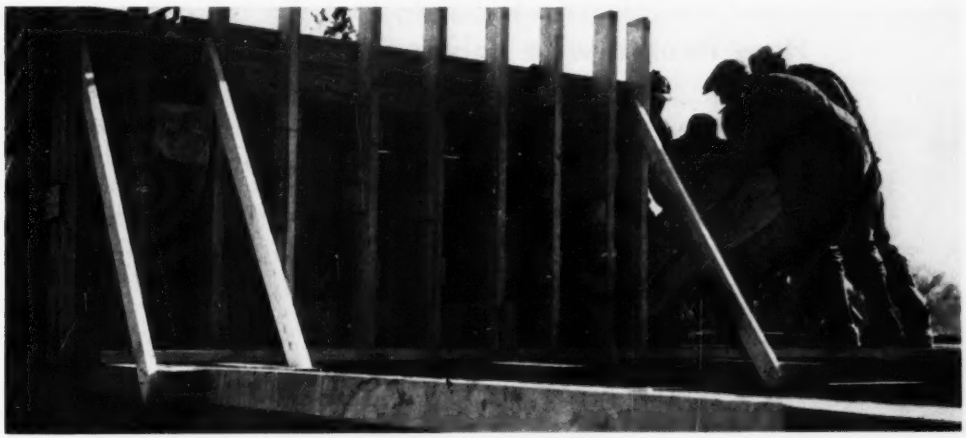
SIX CONCRETE GIRDERS 65 ft long and only 4 ft deep support a large assembly hall at Manhattanville College of the Sacred Heart in Harrison, N. Y. Cast in place and prestressed afterwards in two separate steps, the units are but 6 in. deeper than the fireproofed structural steel girders originally called for. More importantly, they use a total of little more than 8 tons of steel, compared with 72 tons for steel girders and with 40 tons for reinforced concrete members.

The prestressed girders are on 18-ft centers and carry an 8,500-sq ft floor that is also the ceiling of a dining hall—the reason for the 65-ft clear span. Design load is 100 lb per sq ft live, 122 dead (floor deck and flooring), plus girder weight (28 tons each).

The units are a modified I-section 4 ft deep. Top flange is 30 in. wide by 10 in. deep, bottom flange is 20x7, while the web is 8 in. thick. The prestressing cables, 22 per girder, are each made up of 12 high-tensile steel galvanized 0.196-



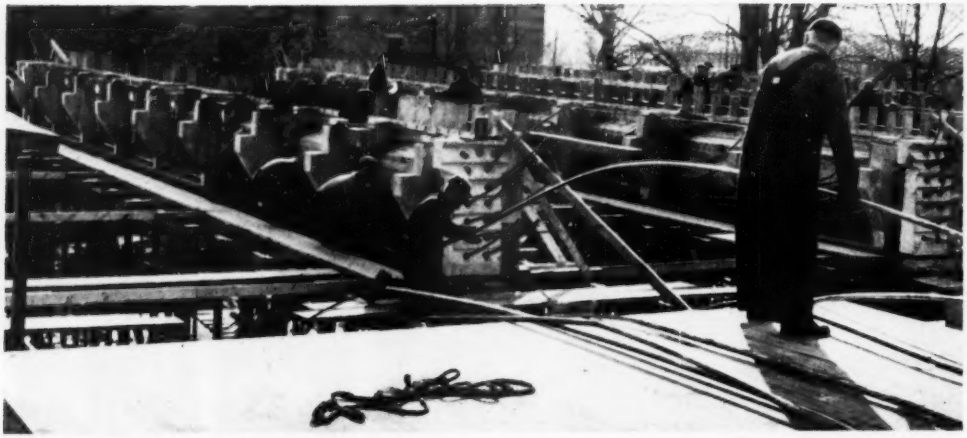
WOOD FORMS FOR GIRDERS at Manhattanville College, Harrison, N. Y., are posted on shores so 28-ton, 65-ft members can be cast in place. This procedure eliminates heavy hoisting equipment that would be needed to handle the girders if precast on the ground.



PRECAST BRACKET FOR BEAM of floor system is positioned in girder. The keystone-shaped units, nine per girder, also help space the prestressing cables. By precasting these as well as end anchorage blocks (far left), much complicated formwork was avoided.

in. wires. To increase resistance to diagonal tension near the ends, seven of the cables curve upward and are anchored to the top of the girder. The remaining fifteen are anchored to precast end blocks. Nine intermediate precast blocks space the cables in the girder and also serve as brackets to carry the beams of the floor system. This floor was poured midway in the prestressing operations; i.e., after some, but not all, of the cables in each girder had been tensioned and grouted.

Because the girders weigh 28 tons each, the George A. Fuller Co., the contractor, cast them in place some 25 ft above ground and thus eliminated heavy lifts and extra hoisting equipment. Procedure was to erect the bottom form on steel and timber shores, set the precast blocks, and close in one side of the girder with prefabricated form assemblies spanning between blocks. Then the metal-sheathed 12-wire cables were placed, a small amount of web and temperature reinforcing steel was

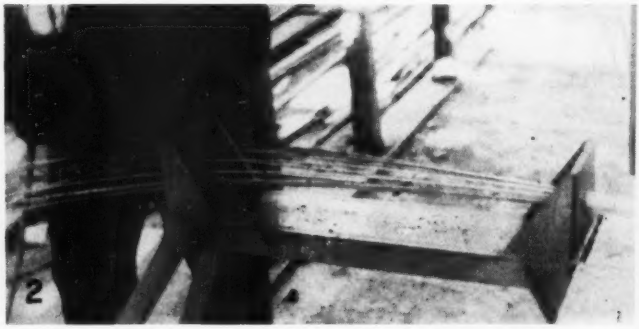


PRESTRESSING CABLES are threaded into place, after which form will be completed and 5,000-psi concrete poured. As in girder beyond, some of the 22 cables in each member curve up through the top. These six prestressed girders are only 4 ft deep and use but 8 tons of steel, compared with 6 ft and 40 tons with reinforced concrete, 3½ ft and 72 tons for fireproofed structural steel.

set, and the rest of the form was erected. Girders were concreted with a 5,000-psi mix (using high-early-strength cement) poured by crane and bucket.

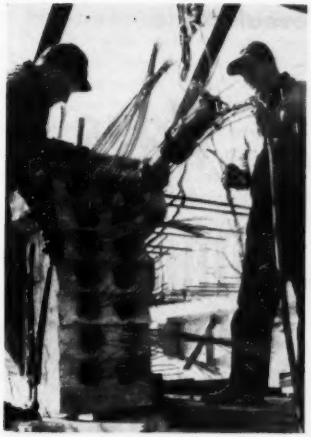
Prestressing took place after the members had cured for 7 days. Because the cables drape from their anchorages down to within a few inches of the girder bottoms at midspan, creating an uplift when tensioned, prestressing was handled in two stages. In the initial operation, only 10 of the 22 cables per girder were stressed. These were enough to carry just the girder dead load plus part of the dead load of the floor, which was to be poured later. Each of the ten cables was tensioned to 150,000 psi (to give a 120,000-psi working

How twelve-wire cables were made up on the job



EACH OF THE GIRDERS on the Manhattanville College job (story above) contains 22 prestressing cables. Each cable contains 12 wires. With six girders to be prestressed, this meant that a total of 132 cables had to be made up and a whale of a lot of wire handled. Here's the way cable assembly was put on a production-line basis to simplify the operation and speed up the job considerably.

The high-tensile steel galvanized wires, 0.196 in. in diameter, were wound on reels. These were mounted horizontally, and three high, in each of four stands (*Fig. 1*). Fed from their individual reels, the 12 wires were passed through two sets of holes in a templet at the head of a 75-ft table. The templet (*Fig. 2*) located the wires correctly around a permanent long-pitch helical central spacer spring as they were pulled along the table while held by a wedge fitting (*Fig. 3*). Pulling power to the fitting came from a hand winch (*Fig. 4*), fitted with ¼-in. wire rope and mounted at the other end on the table. The final operation was to push a 1¼-in. sheathing tube of light-gage steel over the assembled wires (*Fig. 5*) to prevent bonding to the concrete when the girders were poured.



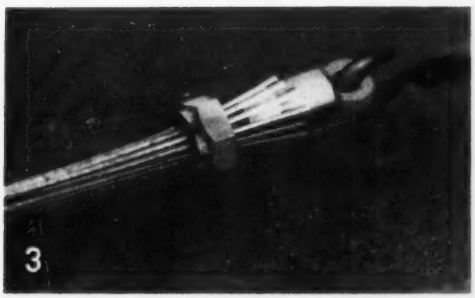
HYDRAULIC JACKS apply 26-ton load to tension the prestressing wires to 150,000 psi. Ten of the cables are jacked after girder has cured (left photo), rest are tensioned after floor system is poured. Those twelve jacked in the second stage include seven having top anchorage (right photo) and those in second, fifth and center of seventh row from bottom at the end anchorage.

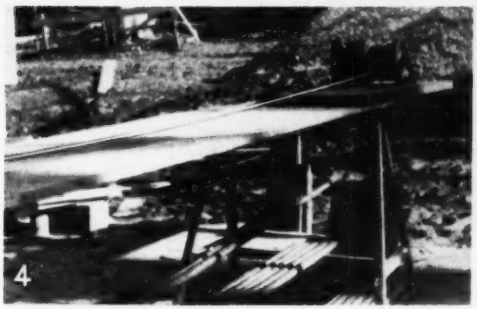
stress) by jacking to 26 tons and wedging the wires into tapered holes in a 1¼-in. steel anchorage plate. Cable elongation was in the neighborhood of 5 in.

When all first-stage cables in a girder had been jacked, they were grouted in. After this had been done on all six members, the floor system was poured and the remaining 12 cables in each girder were tensioned and grouted in the same manner.

General contractor for the work at Manhattanville College was the George A. Fuller Co., New York City. Weiskopf & Pickworth were consulting engineers, Preload Co., Inc., designed the girders, and Eggers & Higgins were architects for the building.

to prestress 65-ft girders at Manhattanville





Submarine Crossings in New York City Area Reveal...

Four Ways to Dunk a Pipeline

By **HENRY T. PEREZ**, Senior Associate Editor

1. Pulling the Narrows Crossing

NARROWS CROSSING bends down over pipe launcher as it takes off from Staten Island shore on its way to Brooklyn, 1¼ watery miles away. Racks on which pipe was assembled stand almost empty as last section waits to be set into the line after this pull is made.

• **The Job**—Installing a natural gas pipeline across The Narrows between Staten Island and Brooklyn for Transcontinental Gas Pipe Line Corp. (Transco). It provides second entry into metropolitan area, supplementing lower Hudson River crossing at 134th St., Manhattan (story page 64).

• **Details** — Narrows crossing is longest (6,600 ft) and deepest (108 ft maximum) underwater crossing on Transco's 1,840-mi system. Pipe is 24-in. dia (inside) with ½-in. wall. It is coated with ⅝ in. of Somastic (protective asphaltic compound), then 3-in. layer of Hevicote (extra-heavy, barium sulphate concrete). Total weight per lin ft is 561 lb in air, 203 lb in seawater.

• **General method** — Winch on Brooklyn shore pulls pipe from Staten Island through trench dredged 25 ft deep and 20 ft wide across bottom of Narrows. Pipe for crossing assembled in eight lengths, and these are welded to the line, one at a time, at water's edge, as pulling operation proceeds.

To keep heavy pipe from burying itself into trench bottom during pull, and to make pulling easier, controlled buoyancy meth-

• Pipeliners have plied their trade around the globe. They have laid pipe across tropical deserts and beyond the Arctic Circle. They have wormed lines over mountains and under the ocean to offshore wells. Yet some of their most difficult jobs have been underwater crossings in or near New York City to deliver Texas natural gas to the Metropolitan area and New England. Pipe for all these New York submarine lines has been large and heavy, the crossings wide and deep, and the work complicated by ship traffic and currents. But even with these similarities, the four most recent crossings have been made by four different methods.

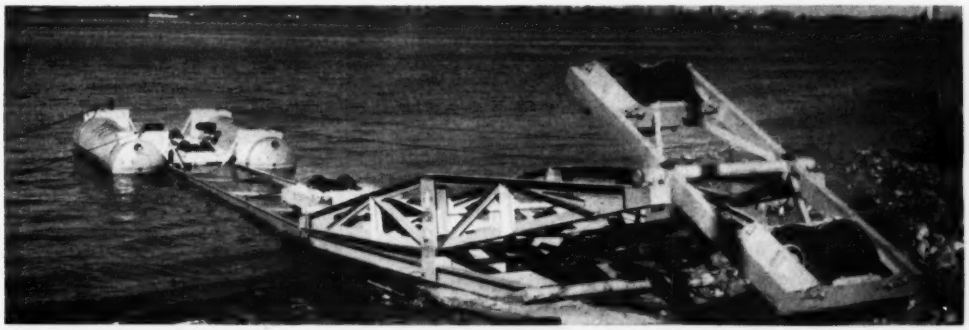
Pipe for one crossing, 108 ft beneath the surface of The Narrows, was pulled 6,600 ft by winch after controlled buoyancy pontoons were attached to keep the line from digging into the bottom. Pipe for another crossing, twin 5,200-ft lines 65 ft beneath the Hudson River near Peekskill, was skidded into place from a barge working its way across. A third crossing, that of the Arthur Kill, was assembled complete with bends and then floated, rotated and sunk into place. The fourth crossing, 92 ft beneath the lower Hudson at Manhattan, was simultaneously pushed and pulled 4,000 ft by winches on both banks.

Undoubtedly the most spectacular idea was a fifth one that didn't work: On the lower Hudson crossing mentioned above, the pipe was to be jetted down 25 ft below river bottom after a spud jet had plowed a furrow to loosen the material. But the bottom proved too hard, so the push-pull through a dredged trench was resorted to. Even this was not without incident, for the tide caught the pipeline and bent it so severely that a section had to be cut out and replaced.

The Narrows crossing ran into difficulties also: The pulling cable parted when the pipe was part way across, a tide 7 ft above normal flooded the winch, and an inexplicable piece of timber fouled up its gearing. A heavier cable had to be attached and the winch cleaned and repaired before the pulling operation could proceed.

Even the upper Hudson crossing had its nervous moment: A heavy combination of wind, current and ice floes swung the skid barge out of alignment, crimping the pipe above the water. The damaged piece had to be burned off and replaced, although a check of the rest of the 24-in. pipe by a man crawling inside showed no damage below waterline.

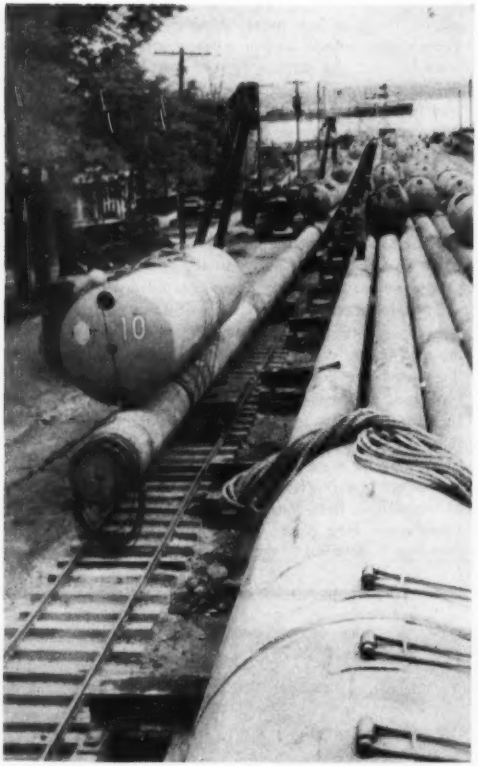
But despite these misfortunes, the work went ahead — all except the Narrows crossing, which is still underway at this writing (late May), have been brought to successful completion. How pipe was laid for these tough submarine crossings is detailed in the following four synopses.



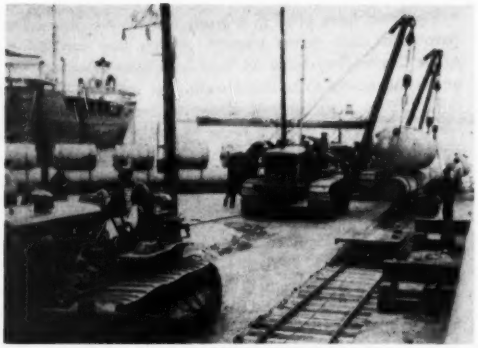
PIPE LAUNCHER is doubly articulated to support pipe evenly at six points during transition from land to water, thus prevent buckling. Triple-tire assemblies can be adjusted to cradle different size pipe, as can the two horizontal guide wheels on floating section.

EQUAL SUPPORT through scale-beam action of launcher lets heavy pipe glide smoothly into water despite weight changes due to attached pontoons. Cradling rollers are 12 ft apart in each pair.

STEEL PONTOONS will reduce submerged pipe's negative buoyancy from 203 lb per ft to less than 10, to ease pull. It also lets pipe be placed to clear two 8-in. conduits to be in same trench.

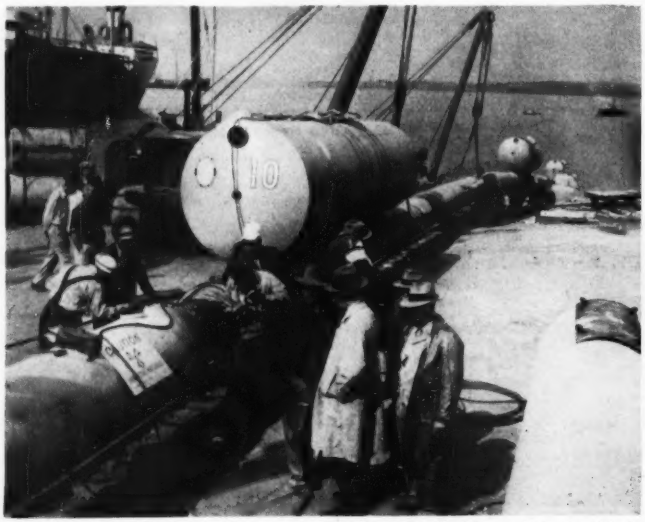


PIPE STRING IS ROLLED on narrow-gage cars to launcher at foot of street in which eight long sections were assembled. Wire rope coiled on end of pipe is trip line for release of pontoons.



TAIL END IS HELD by Cat D8 winch tractor while side-boom rigs lift it to 21 flatcars, cable connected for quick respotting, can be pulled out and back up street to receive next pipe string.

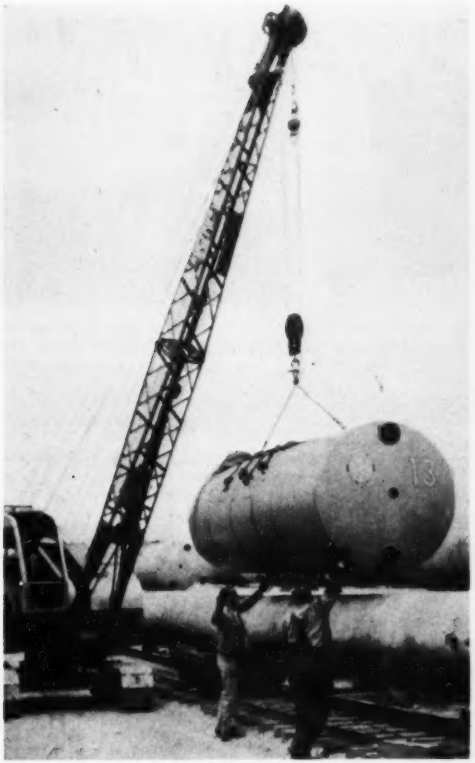
NEXT STRING IS MOVED over to cars by fleet of Allis-Chalmers HD-19 tractors equipped with Berg side-booms. Moving of heavy pipe, which weighs 561 lb per lin ft, progresses in short bites.



SECTIONS ARE JOINED near shore to prepare for next pull. After weld is completed, joint will be coated with 5/8-in. Somastic and 3-in. concrete. At rear, workmen repair track on which cars ride out from under pipe on to a spur, as launcher takes the load.

od is used (first time on crossing of this size). For this, large cylindrical pontoons are attached to the pipe, before launching, so spaced that line has only extremely slight negative buoyancy (6 to 10 lb per lin ft). Pontoons are 20 ft long, 5 ft in dia, and are filled with air under pressure to prevent collapse when submerged, where they have lifting force of 21,600 lb each. On this crossing, 58 pontoons are used, spaced about 110 ft apart. After entire line is pulled across Narrows, each pontoon is released by pulling a line bridled to four cutters through which pontoon's four steel attachment bands pass. The cutters slice the bands and pontoon pops to surface, where it is retrieved.

• **Pipe launching**—Another innovation is use of a "Hydro-Pneumatic Multi-Differential Self-Stabilizing Pipe Launcher" (the jokers!) to ease pipeline into water. It's extremely difficult to get pipe



PONTOON IS PLACED on pipe by Bucyrus-Erie 15-B crane while pipe sections are being joined. Pontoons are spaced about 110 ft. They are 5x20 ft, have lifting force of 21,600 lb when submerged.

STRAP IS TIGHTENED and will be crimped to tie pontoon to line. Four of these double 2-in. steel bands are needed, and they will be cut simultaneously to free the pontoon after line is all in.

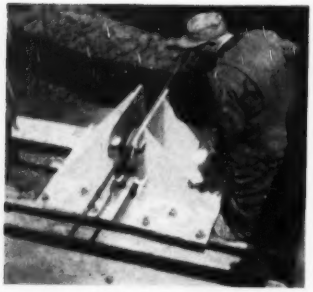
from high bank into water without it buckling under own weight; hence this device. The launcher, part on shore and part floating on pontoons, cradles the pipe at six points over a distance of 120 ft to prevent buckling. Each cradle is an arrangement of three rotating wheels with 10:00x15 heavy-duty Firestone truck tires.

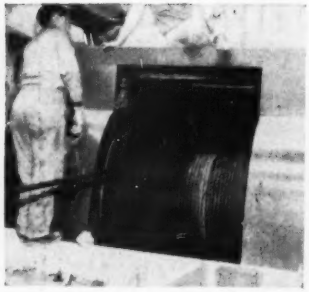
Because pipe bends during transition from land to water, and weight is not uniform due to attached pontoons and variable support in water, cradles are arranged in three pairs. Each cradle of a pair is mounted at the end of a common frame free to turn on a horizontal center shaft and thus act like a scale beam to equalize the load. In addition, the frames of the two pairs on shore are mounted at ends of yet another scale beam to give further equalization. Scale-beam frame of third pair of cradles is mounted on two pontoons to allow for tide variation, which was as much as 13 ft during pull *vs* normal 6 to 7).

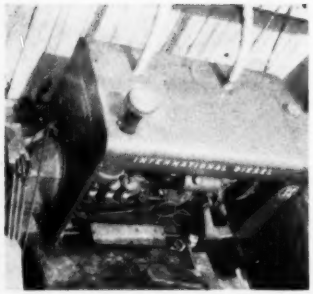
• **Pulling winch**—Powered by 180-hp International UD-24 diesel engine, has 425,000-lb single-line pull. Five speeds forward, one reverse, in transmission. Chain Belt speed reducers. Final reduction in low gear 630:1 (ratio of engine to drum). Two-drum unit. Total capacity both drums is 10,320 ft of 1¼-in. cable (48 mi of ¼-in. cable). Total weight of winch, 23 tons. Over-all size, about 12x25x7 ft high.

• **Pipelaying procedure** — Weld coated pipe into eight strings 800 to 900 ft long on blocking in street running to shore of Narrows. Set launcher on shore at foot of street. Build narrow-gage railway alongside strings of pipe and leading directly to launcher. Anchor the winch on Brooklyn side. Drop its 1¼-in. 6x19 wire-rope pulling cable into the trench to Staten Island with telephone company's cable laying barge. (Changed to 2⅛-in. wire rope during job). Set up telephone and GE two-way radio to coordinate operations. Install Raytheon Fathometer depth sounder on launch to survey

JOINT IS CLAMPED in hydraulic collar during fit-up, so no internal line-up clamps are needed. X-ray capsule is already in pipe.







ON BROOKLYN SIDE, cable that pulls pipe is guided by fairlead (left) into winch (center) powered by big diesel (right). Unit is anchored to 3-ft concrete mat and steel piles in sheeted pit. Designed specially for job, it's capable of 425,000-lb line pull.

OUT OF WATER comes indication of trouble. After cable suddenly slacked when pipe had been pulled part way across Narrows, it was reeled in (left) to reveal cause (center). Head end of pipe (right) had to be raised from bottom for inspection of shackle and nose, and attachment of new heavier cable. When pipe has been dropped back into trench, pull will be tried once again.

trench, and to check exact position and depth of both pipe and cable at all times during pull.

Side-boom tractors set first string of pipe on to flatcars on railway. Pulling cable is shackled to pipe nose. Pontoons are attached to pipe with steel bands. String moves over launcher into water, flatcars running out from under pipe, as launcher takes load. Pull is stopped when tail end of pipe is ahead of next string.

Side-booms place this string on flatcars, which have been respotted. String is rolled ahead and butted to tail of previous section. While joint is welded, X-rayed, coated and concreted, pontoons are attached to the line. When joint and pontoons are complete, pull. Repeat. Best progress — two 800-ft lengths per day.

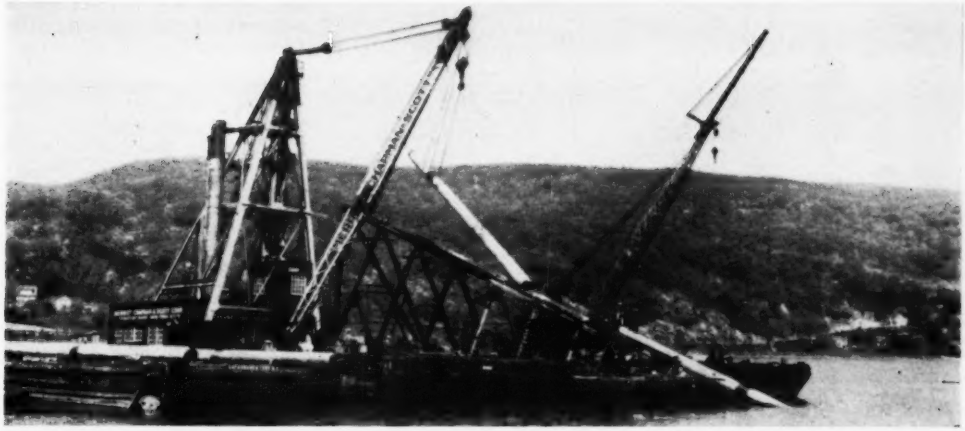
When head end reaches Brooklyn side, check to see that pipeline is in proper position in trench and at required depth below water. Cut pontoons loose. Backfill trench.

• **Pipeliners**—Directing operations for Transco is Raymond Crowe, chief engineer, and Carl Whitaker, chief inspector. Contractors are Samuel Gallucci & Sons, Inc., Corona, L. I., with Tod Pazdral in charge. The Hallen Co., Long Island City, did welding. All submarine and flotation work is directed by Sammy Collins of the Collins Construction Co., Houston, submarine pipeline specialists, who developed the controlled buoyancy method, devised the pipe launcher and designed the Rivermaster pulling winch.

2. Skidding the Upper Hudson Crossing

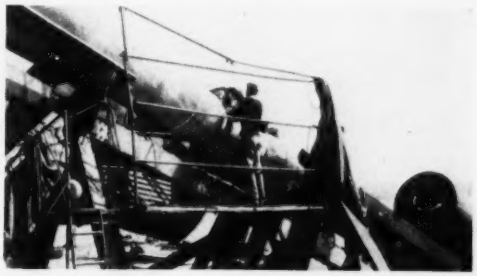
• **The Job**—Installing twin natural gas pipelines across Hudson River near Peekskill, N. Y. (35 mi above New York City), for Algonquin Gas Transmission Co. They connect extension of original Big Inch line with new system to take Texas gas to New England.

• **Details**—Dual crossing is 5,200 ft long and up to 65 ft deep, with pipe in each of two trenches 100 ft apart. Pipe is 24-in. dia, ½-in. wall. It is given minimum 3/32-in. coating of Bitumastic 70B enamel and Fiberglas, then 3-in. layer of heavy gunite made with 60% barites. Weight is 500 lb per lin ft.



AT HUDSON RIVER CROSSING near Peekskill, derrick boat places 120-ft pipe section into trough of sloping skid where it will be welded into the line. The launching skid is 140 ft long and 50 ft high, fashioned from face-down A-frame of old derrick.

PIPE IS FITTED with 5x20-ft pontoon while next 120-ft section of line is joined on at welding station (left). A smaller pontoon will be attached farther up to shorten the span at launching.



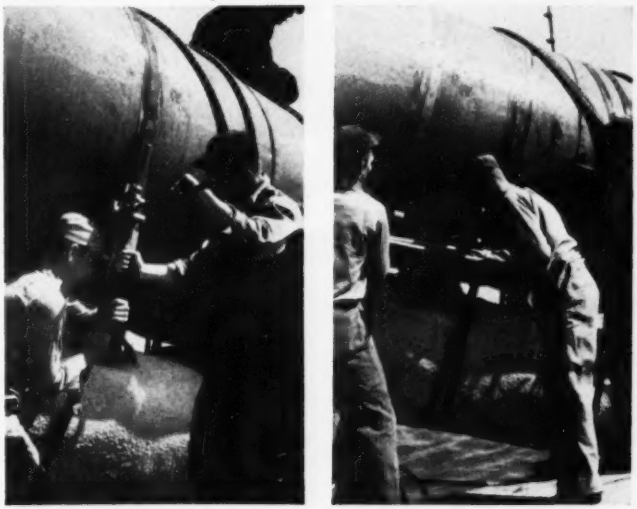
JOINT IS WRAPPED with a rock shield after it has been fitted up, welded, reinforced with a welded steel sleeve (left photo), and coated with Bitumastic. The 3 in. of gunite is not put on joints.

• **General method**—Pipe is lowered into dredged trench (25 ft wide, 15 ft deep)from sloping-skid pipe-launcher on barge. Pipe for crossing was assembled in 120-ft lengths, and as these are welded to the line on the skid, barge backs away to let pipe slide into water.

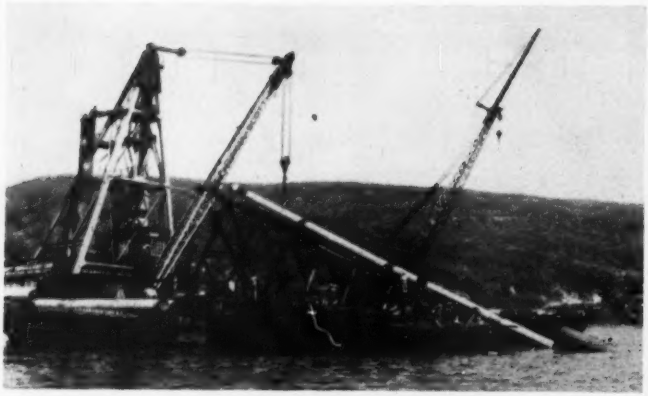
To prevent pipe from buckling by settling to trench bottom at too sharp an angle, pontoon is attached to each 120-ft section of pipe. They are progressively cut loose as pipeline reaches bottom.

• **Pipe skid**—Mounted on railroad car float 280 ft long, 36 ft wide. Consists of steel A-frame from old floating derrick, placed face down on deck. What was rear leg, now slopes upward at 20-deg angle. Heavy steel extensions, braces and troughing channels added to sloping leg to make it into a skid 140 ft long with upper end 50 ft high.

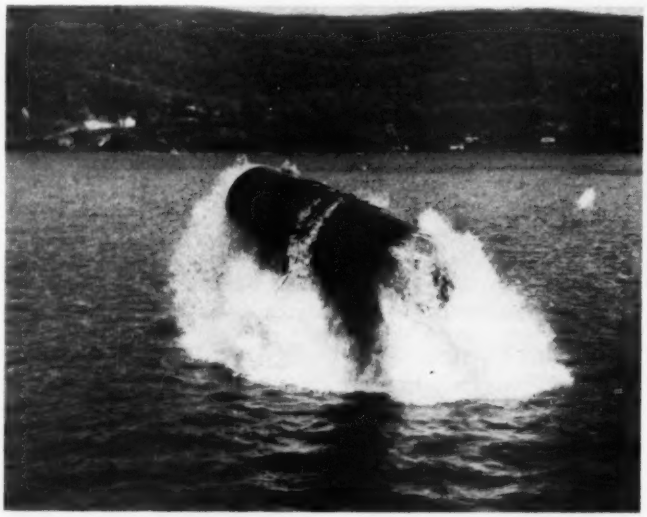
Lashed alongside car float is 100-ton derrick boat "Chief" to handle pipe sections and 15-ton



PONTOON IS BANDED to 500-lb-per-lin-ft pipe to add buoyancy as it sinks from skid barge to bottom of trench dredged a maximum 65 ft below river surface. Baling device (left) tightens the doubled steel band, which is then crimped (right) to hold it securely.



PIPELINE SLIDES INTO HUDSON and pontoon begins to submerge when the skid barge moves back from under. Derrick boat holds the end of the pipe to make its launching easier.



PONTOON POPS OUT OF HUDSON after having been cut loose from pipe in trench. Its function is to prevent pipe from settling to bottom at too sharp an angle after launching.

barge-mounted whirler to handle pontoons, all maneuvered by eight 1⅛-in. anchor lines.

• **Pipelaying procedure**—Car float is moored directly over dredged trench, with skid pointing downward toward shore from which crossing was started. Chief lifts barge-delivered 120-ft pipe length (30 tons), places it in sloping trough of skid. Pipe is butted against end of previously launched section and joint is welded. After X-ray, split-sleeve collar of ½x9-in. curved plate is welded around joint as reinforcement. Then joint is coated and wrapped with tough asphalt-impregnated paper ¼ in. thick to act as a rock shield.

While joint is being prepared, Collins pontoon is fastened to line 30 ft ahead of joint (just at edge of car float). Pontoon held by four double wraps of 2-in. steel strap.

When joint and pontoon are prepared, anchor engines pull car float out from under pipe, which slides down skid into water. Pipe is snubbed when end reaches welding station, so another 120-ft length can be added. Pontoons progressively released after three more sections have been launched. When one pipeline has been laid across, repeat for other, then backfill trenches. Best progress—four 120-ft lengths per day.

• **Pipeliners**—Acting as agent for Algonquin is Ford, Bacon & Davis, Inc., New York engineers, with Howard Hayes as project manager and Peter New as resident. Merritt-Chapman & Scott Corp., New York, is constructing the double river crossing. William Hepworth is M-C & S project manager, working under James T. Denton, general superintendent. Taylor MacElroy is project engineer. The Hallen Co. is welding all pipe.

3. Floating the Arthur Kill Crossing

• **The job**—Underwater crossing of Arthur Kill between Staten Island and New Jersey. It is for Transcontinental Gas Pipe Line Corp.'s 11-mi spur to Brooklyn from Texas-New York main line.

• **Details**—Crossing is 1,650 ft long. About 700 ft of it is 50 ft below mean low water (where pipe passes under ship channel), rest is some 40 ft shallower. Pipe is same as for Narrows crossing (24-in. dia, ½-in. wall, ⅝-in. Somastic, 3-in. Hevicote, 561 lb/ft).

• **General method** — Pipe is assembled on shore, complete with two sharp (28 deg maximum) reverse bends to drop line beneath deep channel. Buoyed up by pontoons, and with bends horizontal, it is floated over 12-ft dredged trench. Pontoons are cut loose to let pipe swing vertical and sink into place. Water traffic through Arthur Kill extremely heavy, but interruptable for short periods, so floating of line is feasible. Kill channel bottom is rock, so fabricating sharp vertical bends into line eliminates much expensive trenching at channel sides.

• **Pipelaying procedure**—Coated, concreted pipe for crossing is assembled on Staten Island in three sections. Reverse bends, which will be in vertical plane when crossing is complete, are attached horizontally. Collins pontoons are banded to pipe.

First section is launched by sliding it over nests of rubber covered cradling rollers as side-boom tractors walk bend ahead. Floating

FOR ARTHUR KILL CROSSING, sharp reverse bends are fabricated in the line so it can conform more closely with channel cross-section, thus avoid extra trench excavation in rock. When rotated, bend will put one section of this pipe 40 ft deeper than other.

ROLLERS CRADLE PIPE for launching from low bank, and pontoons will float it in water. The nose of this first section will be pulled out to channel edge and tail end will be welded to next section before final move to place, when channel will be closed.

PONTOONS FLOAT PIPE while it is positioned across channel. The bends are still horizontal, as shown by location of tops of pontoons. Pipe will be rotated downward to the right until vertical.

CUTTERS RELEASE PONTOONS (one of which is shown breaking water) to let pipe rotate and settle to bottom of dredged trench. The channel had to be closed to traffic less than 5 hr during job.

FINAL SECTION of Arthur Kill crossing is pushed out from shore by side-boom tractors and crane to be joined to the water section. Lines from derrick boat make the line-up.

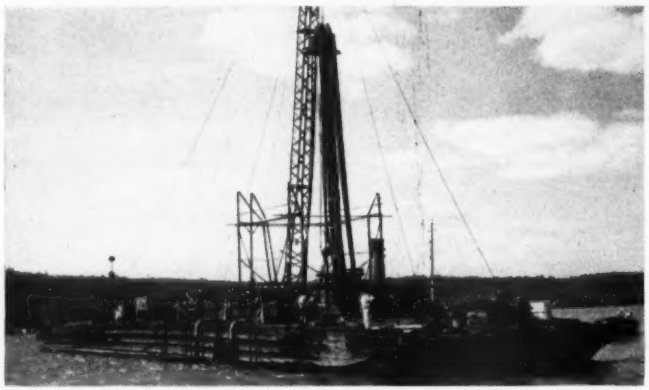
pipe section extends out to ship channel, but does not block it. Shore end of first section is welded to second.

Channel is closed to traffic while second section is launched and horizontal assembly floated into position over trench. Enough pontoons are released so that pipe between bends has slight negative buoyancy and rotates downward. Assembly, now in vertical plane, is allowed to sink into trench. Channel is opened to traffic, having been blocked less than 5 hr. Rest of pontoons are cut loose.

Derrick boat outside channel lifts shore end of submerged line just above water. Remaining short, straight section of pipe is pushed out from shore and welded to it. Completed joint is dropped to bottom and crossing is backfilled.

• **Pipeliners**—Same as for Narrows crossing.

4. Push-Pulling the Lower Hudson Crossing



RIVER BOTTOM IS PLOWED by spud jet as first step in unsuccessful scheme to jet a line beneath Hudson at Manhattan. Bottom was too hard, so trench was dredged for push-pull.

• **The job**—Putting in last link of Transcontinental Gas Pipe Line Corp.'s 1,840-mi Texas-New York main line—an underwater crossing of Hudson River from New Jersey to Manhattan.

• **Details**—Crossing is 4,000 ft long, up to 92 ft deep. Pipe is 26-in. dia (outside) with 1⅛-in. wall. It is coated with ¾-in. layer of Somastic protected by 1x2-in. wood slats banded on with steel straps. Weight per lin ft is 390 lb in air, little more than 100 in water.

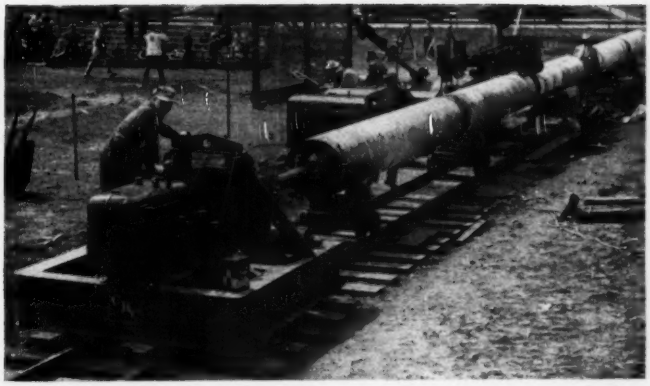
• **Unsuccessful method** — Original scheme was to loosen river bottom material, then jet pipeline down into place. First operation was to be done by a spud jet making continuous traverse along crossing's centerline to plow a furrow 25 ft deep and make sure there were no obstructions for pipe to hang up on.

Spud jet, operating through a 3-ft square deck well in a 256-ft railway car float, was 112-ft length of 24-in. pipe with a 1-in. wall. Bottom 25 ft of spud was bulkheaded into three chambers, each fed by 4-in. pipe from pump manifold and fitted with ten 1½-in. jet nozzles set 79 deg from vertical to flush upward slightly. Three additional 4-in. pipes to spud bottom directed water straight down, and 30 and 60 deg above horizontal. Spud was handled by guyed oil-field boom and kept plumb by cable from spud bottom to bow of barge. Four Gardner-Denver 3,500-gpm 8-in. pumps each powered by two 200-hp General Motors diesel engines supplied 130-psi jet water. Deck winches maneuvered spud barge through ⅞-in. cable to shore, while tugs held it on line.

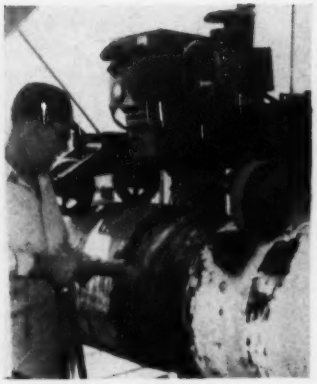
Plowing was not successful. Spud cut its way down to required depth, but barge could not work it ahead easily. Bottom material did not loosen as anticipated.

If plowing had worked, pipe for half of crossing was to be assembled on long string of barges and fitted with jet manifolds along its underside. Manifolds, with a flattened nozzle pointing 15 deg down from horizontal every 4 ft, would be fed from risers on 20-ft centers. Water would be supplied by 20 pumps like those for spud jet.

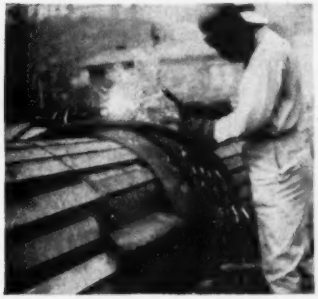
Barge string would be spotted and anchored over area plowed and loosened by spud, pipeline lowered to bottom, and jets turned on to stir up material so pipe



PIPE STRING IS TURNED by rail-mounted machine as automatic welder adds another length to line for Hudson crossing. This rig handled strings of 26-in. pipe up to 440 ft long.



JOINT IS PEENED between passes of automatic welder. Wall of pipe is 1 1/8 in. thick.



COLLAR IS WELDED to slatted pipe in launching yard to hold emergency lifting cable. Ear on pipe prevents collar sliding.

LINE IS SUPPORTED by hoist on offshore frame during launching and line-up. Barges support head end during trip across river.

LENGTH IS ATTACHED when end of line reaches water's edge, so another 300-ft move can be made. Joint will be coated next.

would sink to place under own weight. Jet risers would be unscrewed when pipe had buried itself 25 ft. Then second half of crossing would be similarly fitted out on same barges and joined to first pipe section whose midstream end would be held above surface for welding. When joined, second section would be dropped to bottom and jetted in to complete the crossing.

Entire scheme was abandoned (but only after pipe's jets were made up and pumps and pipe-lowering equipment procured) because river bottom material proved too hard for spud-jet plow to work through. However, it is reported that this method has been used successfully on at least one subsequent job, where bottom material was more cooperative.

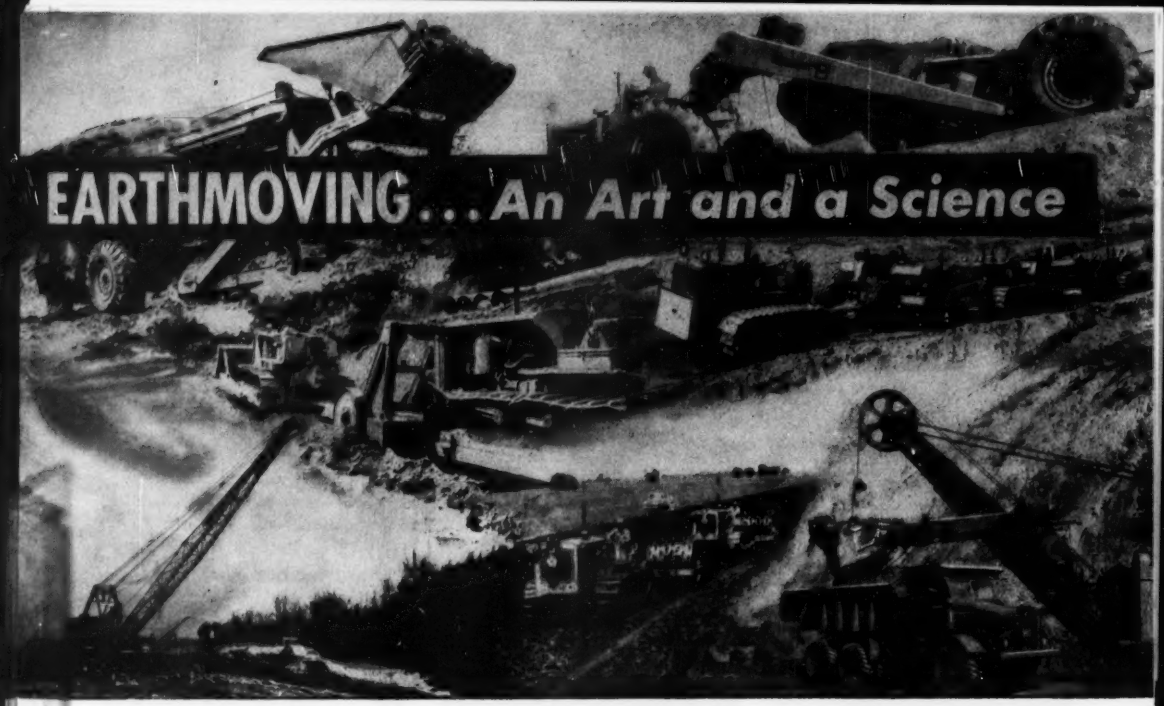
• **Successful method**—Winches on both shores simultaneously pushed and pulled line through trench dredged 25 ft deep. Head end of pipe held above bottom by pair of barges to prevent digging in. Pipe for crossing assembled in 300-ft strings that were welded into line as push-pull proceeded. Best progress — 600 ft per day.

• **Pipe welding**—One of job's original plans that did work well was for automatic pipe rotation and welding. Coated pipe was delivered in 20-ft lengths and welded up on job into nine 440-ft strings (which later had to be cut off to 300 ft when launching site was shifted due to change in pipelaying procedure). Thus there were nearly 200 joints to be welded, with five passes per joint. And even with automatic welding, it took about 1 hr to complete a joint in the large-diameter thick-walled pipe.

Welder consisted of two 350-amp Lincoln machines hooked up to an altered Big Three automatic welding head (ordinarily used for double jointing). Pipe turner was Crutcher- Rolfs-Cummings (CRC) rig powered by 65-hp International engine geared way down to rotate pipe at 10 to 12 in. per min. CRC machine clamped to one end of pipe string through universal-jointed shaft.

Pipe to be joined to string was placed on rubber-covered transverse cradling rollers on flatcars riding narrow-gage track, on which CRC machine also rode. Joint was positioned under welding head and tacked. Entire string was rotated while automatic welder completed joint. Then turner backed down track, pulling pipe string 20 ft so next piece could be placed and welded into line. For last joint in string, of course, turner was more than 400 ft down track from welder.

• **Pipeliners**—Fish Constructors, Inc., Houston, was contract-awarding agency for Transco. Omaha Dredge & Dock Co. was contractor for Hudson River Crossing, and job was managed by Louis Pentzien and Joe McMaken. Ray Henry was superintendent, Clarence Zarn was project engineer.



18. Off-Highway Trucks: Specialized Haulers

By ALAN S. McCLIMON, Manager, Sales Development
Euclid Road Machinery Co.

AN OFF-HIGHWAY TRUCK is a piece of "construction machinery"; not a "commercial truck". Its basic design concept is to provide a machine of high productive ability, long service life, minimum maintenance, high accessibility for maintenance and suitability to do a specific job. It may be rear-dump, side-dump or a bottom-dump trailer.

Rear-Dump Trucks

Off-highway rear-dump trucks have a rated payload capacity from 10 to 50 tons. They are specialized haulers designed for heavy-duty construction and mining work where adverse grades may average 5 to 10%, and with short, steep pitches as high as 20%.

The off-highway truck is considerably different from a highway-type truck adapted to off-highway service. There are basic differences in design of the frame, axles, springs, bodies and hoists, power-train components and steering gear. Even such secondary items as the front bumper, the cab, the radiator shutters, air cleaners, exhaust stacks and mufflers and seats are different.

For example, a typical four-wheel truck widely used in heavy construction and mining, has a rear-axle load of 63,000 lb loaded, or 3½ times the legal highway limit of 18,000 lb. This 22-ton truck is 126 in. wide, about 1/3 more than the legal width in most states.

The specialized nature of this equipment is indicated in that there are 18 manufacturers of highway-type trucks, compared with eight manufacturers of heavy-duty off-the-highway rear dumpers; and only five offer a wide selection of truck sizes from 10 to 30 tons.

Off-highway trucks, by manufacturers' model designation, are classified as such and are not subject to Federal excise tax, amounting to about 5%, which is assessed against highway-type trucks, even though they are used in off-the-highway applications.

Off-highway trucks have a high ratio of net weight to payload. For each pound of rated payload capacity, off-highway end-dump trucks have about 1 lb of chassis and body weight. This 1:1 ratio compares with 1:.7 to 1:.85 for a typical 10-ton highway truck. The extra weight in the off-road truck is found in load-carrying members such as frame, axles, body and hoist, and in the power-train components such as the diesel engine, which is used almost universally in off-the-highway hauling equipment. Torque converters or transmission and the rear-axle gearing also add weight. Also, there is additional protective equipment such as cab guard, motor pan, transmission and front-axle protection plate, body safety prop, cab structure and fenders.

Rear axles are of special design, usually having the final reduction out at the wheel with planetary gearing; or by driving a pinion in

(Continued on page 69)

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13 STORY WELDED FRAMEWORK SAVES 25% STEEL

By **NED H. ABRAMS**, Architect
Sunnyvale, California

EFFICIENT use of all-welded prefabricated construction has cut steel needs by 25% and costs by 20% on this 900 ton framework. Total weight of the hotel building is estimated at one-third less than conventional structures making this 13-story, 100' x 155' building one of the lightest, yet strongest structures in the Pacific Northwest.

Light, open trusses carry most of the dead loads to the columns. Structural members are shop fabricated at low cost with fast, downhand welding techniques. Lattice columns are erected from the street while other framework is erected from a crane platform on the fourth floor level using a 123-foot boom.

During construction it was decided to increase the width of the framework from 40' to 45'. Had it not been for the welded design, such a modification would have entailed considerable cost.

Fig. 3. All-Welded Framework *for the 13-story Ridpath Hotel, Spokane, Washington. Steel Fabricators: Union Iron Works; Erectors: Dix Steel Company, Spokane, Wash.*

How to Design Arc Welded Structures

Latest data on calculations, procedures and costs are found in the new 9th Edition Procedure Handbook of Arc Welding Design and Practice. Price only $2.00 postpaid in U.S.A.; $2.50 elsewhere.

WELDED DESIGN ALWAYS SAVES STEEL LOWERS COST

Fig. 1 Typical Detail—*Lattice column shop fabricated at low cost from 3"—4.1# channels and ⅜" plates and field welded with Lincoln "Fleetweld" 5 electrodes.*

Fig. 2 Column and Spandrel Support—*Typical detail fourth to eleventh stories. Shows addition of 5'0" to building by splicing 10" channels to the frame. Tie straps are 4" x ⅜" angles.*

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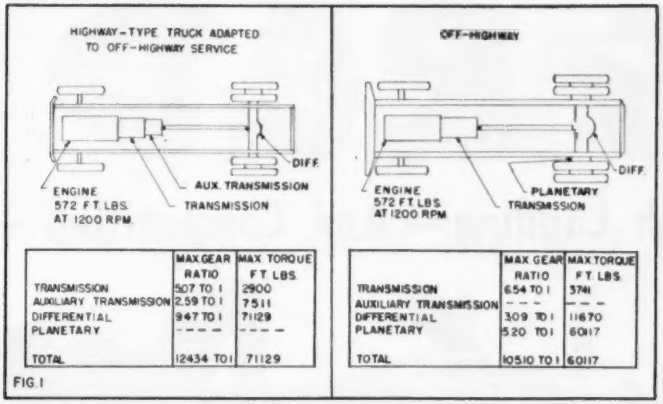

	MAX. GEAR RATIO	MAX. TORQUE FT. LBS.
TRANSMISSION	5.07 TO 1	2900
AUXILIARY TRANSMISSION	2.59 TO 1	7511
DIFFERENTIAL	9.47 TO 1	71129
PLANETARY	- - - -	- - - -
TOTAL	12434 TO 1	71129

	MAX. GEAR RATIO	MAX. TORQUE FT. LBS.
TRANSMISSION	6.54 TO 1	3741
AUXILIARY TRANSMISSION	- - -	- - -
DIFFERENTIAL	3.09 TO 1	11670
PLANETARY	5.20 TO 1	60117
TOTAL	10510 TO 1	60117

FIG. 1

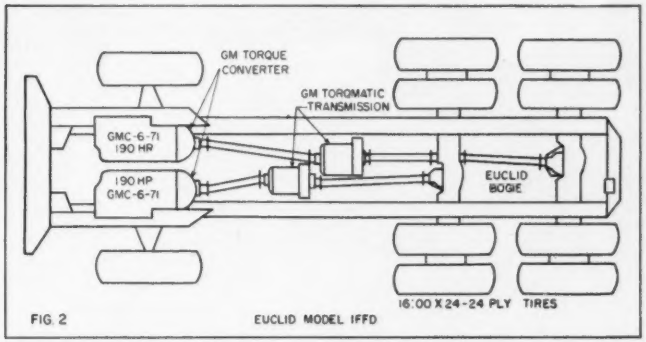

FIG. 2 EUCLID MODEL IFFD

an internal ring gear; or by chain drive from a jack shaft to a sprocket on the drive wheel.

The planetary type is used by three leading manufacturers. This design gives total rear-axle ratios from 12:1 up to 20:1, which are required for off-the-highway service. Rear-axle ratios are limited to 12:1 in highway-type axles because of space limitations. An axle carrier having reduction over 12:1 would have insufficient road clearance under the banjo housing with the maximum size tire normally used on the highway.

But the planetary has other advantages, too. It places the final reduction out at the wheel so that torque loads on the preceding power-train components are reduced. *Fig. 1* illustrates this. The planetary or similar design can reduce maximum torque loads on the drive-axle shaft from ¼th to 1/7th.

High-speed, high-performance diesel engines have given a tremendous increase in the productive ability of construction and mining hauling trucks within the last seven years. In 1941, the truck size most widely used was of 15-ton capacity powered by a 150-hp diesel. That truck had only 1 hp for each 400 lb of gross weight. In 1945 and 1946, the 22-ton rear-dump truck came into service. It was powered by a 275-hp engine and 305 lb of gross weight. Current standards are within 290 to 360 lb per horsepower.

Currently, large earthmoving and mining operations are using a 400-hp, 34-ton truck with a top speed of 29 mph empty. Power is supplied by a 12-cylinder, 400-hp V-type diesel engine, or by two 190- or 200-hp, 6-cylinder engines mounted side by side, each engine driving through an independent power train to each of the two rear axles *(Fig. 2)*. This twin-power arrangement uses two torque converters and semi-automatic transmissions. Transmissions are shifted simultaneously by a single lever.

There is a strong trend toward torque converters in the rear-dumps in the 22- and 34-ton sizes. The torque converter reduces driver error in shifting, and higher production per hour is obtained over variable grades and changing haul road surfaces.

Off-highway trucks may be

(Continued on page 72)

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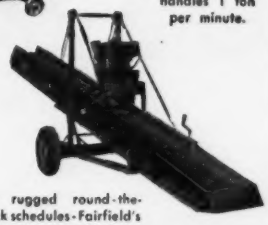

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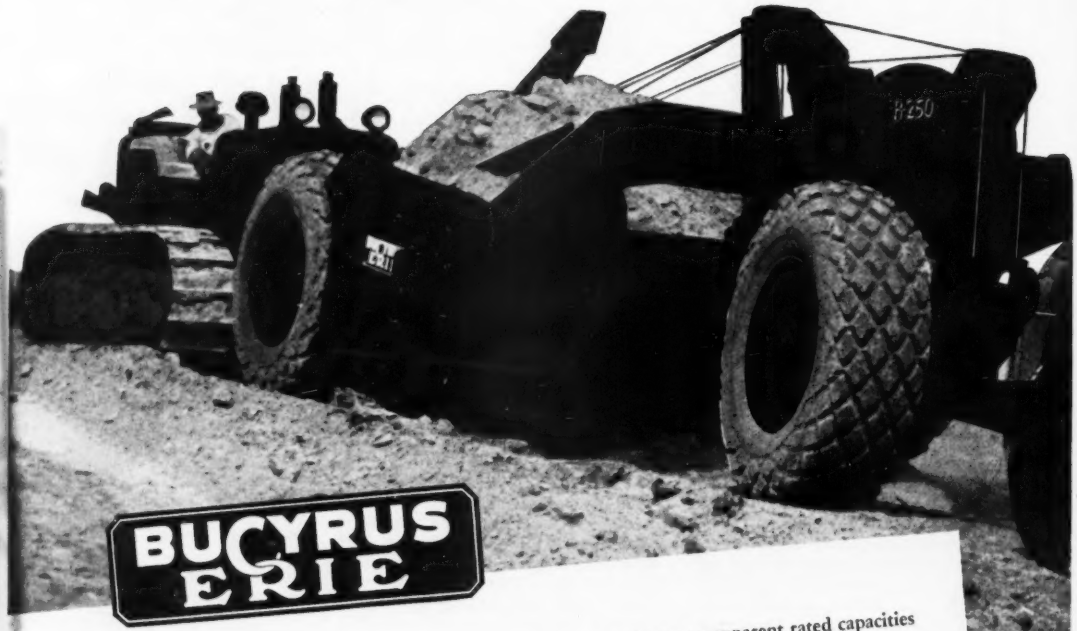

BUCYRUS ERIE

BLUE shale so hard it often had to be shot and ripped before loading . . . scraper maintenance costs way up, yardage output down . . . pushers not used to avoid damage to scrapers. That was the picture on a tough highway job until one of the contractor's International TD-24 Tractors was teamed with a Bucyrus-Erie B-250 scraper. Look what happened when the Big Red team went into action.

On a 60-day run, this 22-yd. outfit not only scraped out heaping loads of shale, but did it without blasting. Big Red team loads averaged 13.5 to 20% higher than competitive units — and two of these scrapers had greater apparent rated capacities than the B-250. Loading time of the B-250 averaged 1¾ minutes with a pusher. In spite of heavy shock loads, the B-250 showed no signs of failure.

This is one of many jobs on which the Big Red team has performed with complete satisfaction to the owner. Performance details on this job, or any other job on which records have been carefully compiled, are yours for the asking. Study these records . . . and let us demonstrate the Big Red team *on your own job*. Then you'll have convincing proof that this combination gives you the ultimate in crawler tractor earthmoving performance.

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TEAM

On Million-Yard Highway Project

Even the tough blue shale on this western highway job couldn't stop the B-250 from getting heaping loads. This scraper was also used for finishing on the job because it did such an excellent job of spreading.

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BIG 50-TON REAR-DUMP Euclid six-wheel off-highway truck works with a large-capacity shovel in a mine-stripping operation.

FOUR-WHEEL REAR-DUMPER Mack has a capacity of 22 tons and is built to work on such grueling jobs as this rock work.

either four-wheel or six-wheel, usually are not powered on the front, steering axle. Since all weight is carried by pneumatic tires, the size and capacity of rear-dump hauling units is related directly to the tire sizes used. Tire capacity ratings are set by the Tire and Rim Association with specified inflation pressures and ply ratings for each size of tire at a 30-mph speed rating.

On four-wheel trucks the single front tires are one to two sizes smaller than the dual rear tires. On six-wheel trucks tire size is usually the same front and rear. Tire sizes are from 12.00x24, which is the smallest size applied on a four-wheel truck, up to 18.00x33—32-ply tires used on the giant 50-ton, six-wheel unit recently put into field service.

Four-wheel trucks are built in the following sizes:

Size	*Tire Size Front*	*Tire Size Rear*	*Range of HP*
10-ton truck	11.00 x 24 or 12.00 x 24	12.00 x 24 (dual)	125-150
15-ton truck	14.00 x 24 or 12.00 x 24	16.00 x 24 (dual) 14.00 x 24 (dual)	190-275 150-190
22-25-ton truck	14.00 x 24	18.00 x 25 (dual)	275-350
30-ton truck	18.00 x 32	18.00 x 32 (dual)	300

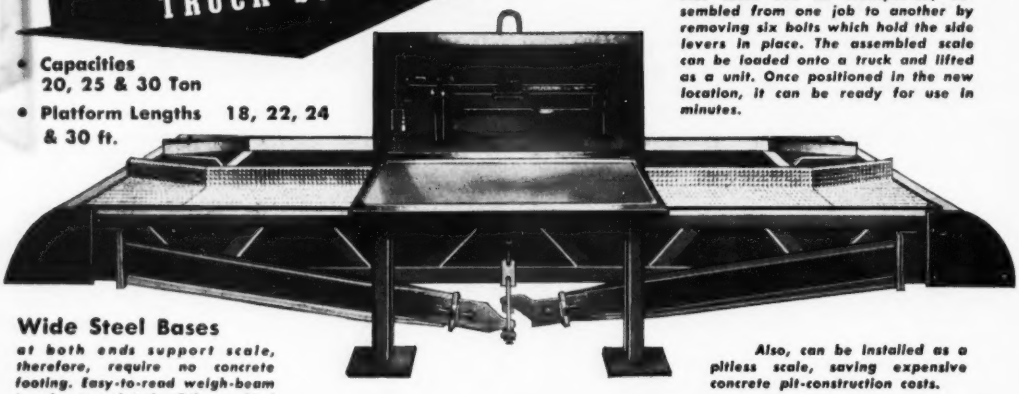
THURMAN PORTABLE TRUCK SCALE

THIS SCALE CAN BE MOVED FROM JOB TO JOB, AS A UNIT

Accurate and Portable

This scale can be transported, assembled from one job to another by removing six bolts which hold the side levers in place. The assembled scale can be loaded onto a truck and lifted as a unit. Once positioned in the new location, it can be ready for use in minutes.

- Capacities 20, 25 & 30 Ton
- Platform Lengths 18, 22, 24 & 30 ft.



Wide Steel Bases

at both ends support scale, therefore, require no concrete footing. Easy-to-read weigh-beam is chrome-plated. Other vital parts electro-plated against erosion.

Also, can be installed as a pitless scale, saving expensive concrete pit-construction costs.

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THURMAN MACHINE CO.
(Scale Division)
Established 1918
152 North Fifth Street Columbus 15, Ohio

The first three truck sizes are used widely, whereas the 30-ton four-wheel truck has limited use because its rear-axle loaded weight of 38 tons requires a highly stabilized subbase for the haul road.

In the tandem-axle size, or 6x4 truck having power drive on the two rear axles, off-highway trucks are provided in the following sizes:

Size	*Tires Front and Rear*	*Range of HP*
15-ton truck	12.00 x 24, 16 ply	200-275
20-ton truck	13.00 x 24	200-275
25-ton truck	14.00 x 24	200-350
30-34-ton truck	14.00 x 24 or 16.00 x 24	300-400

Prices for rear-dump units are from $1,200 to over $1,500 per ton of capacity, depending on the horsepower and use of a converter. Typical prices according to size are as follows:

Size	*Price per Ton of Capacity*	*Price per Lb of Net Weight*
10-ton	$1,563	69½c
15-ton	1,540	70c
22-ton	1,370	71c
22-ton with torque converter	1,480	71½c
34-ton	1,280	68½c

Where does the rear-dump truck properly apply in construction work?

Because of its large open-top body and its ability to shed any type of material from the body in dumping, it is a most flexible type of hauling unit. Since 75 to 80% of the total gross weight of a rear-dump truck is carried by the rear driving axle, it has a high tractive potential. On steep grades, there is a transfer of weight from the front axle to the rear driving axle which adds to tractive ability. It has much greater traction than the bottom-dump unit, where approximately 40% of the total gross weight is carried by the driving axle.

In recent years, a heated body has been made available for the rear-dump truck to handle frozen material in the winter time and wet sticky material in other seasons. This body consists of an inner liner plate separated from the outer shell by corrugated steel plate or T bars. Exhaust gases from the engine are passed through the space between the liner plate and the outer body shell and these gases heat the truck body to prevent accumulation of frozen material and prevent the buildup of wet, adhesive clay. After the exhaust gases

(Continued on page 76)

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This file contains a complete range of tubular steel panel sizes and types to meet usual or unusual job requirements. Full descriptions and drawings of all component parts interchangeable for conventional or stationary scaffolds, rolling towers, and maintenance stands. Also a series of installation views showing ADVANCE SCAFFOLDING at work.

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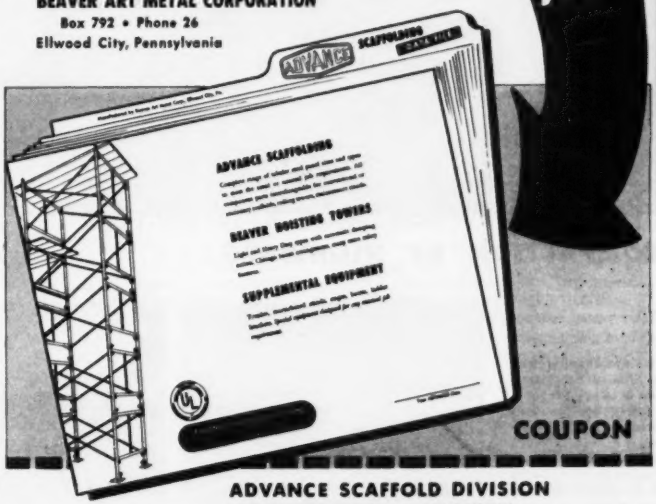

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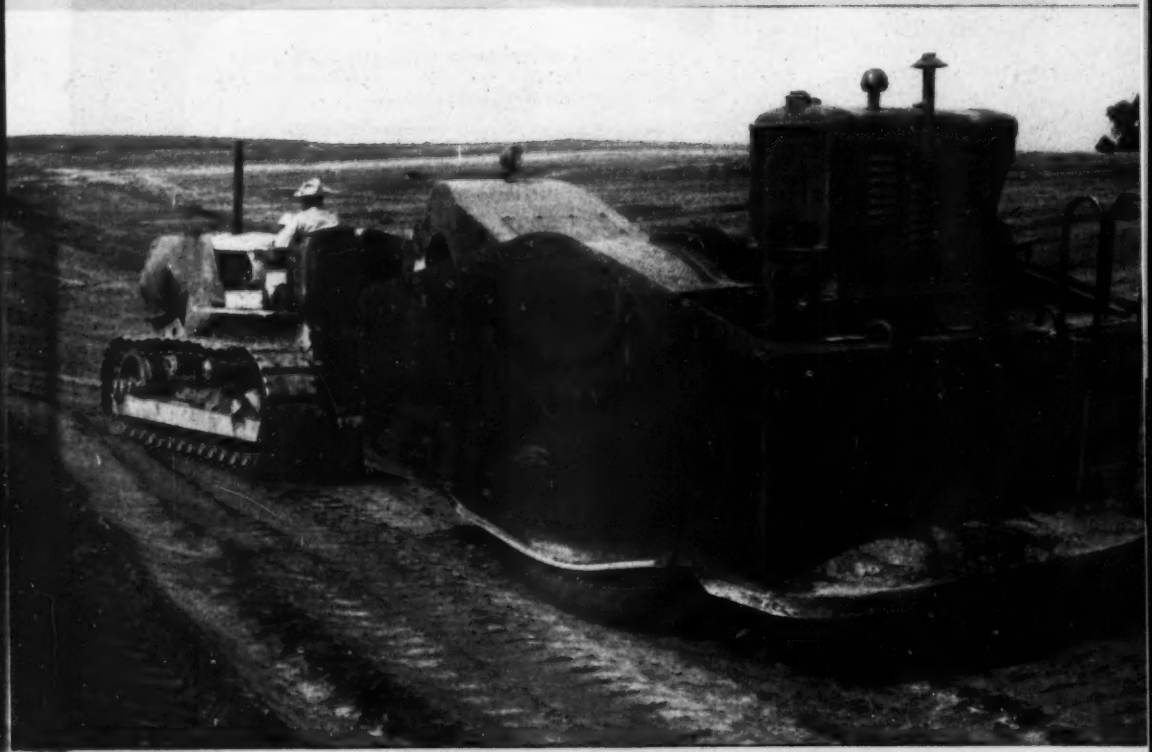
THE Cedarapids VIBRATORY

Built by IOWA



COMPACTION OF HIGHWAYS . . .

This road was NOT Compacted

It's obvious that there was little or no attempt made to obtain the proper density for the base and sub-base of this road. The less dense a material, the more room there is for water to permeate the soil. The result . . . early structural failure and a costly maintenance and repair job.

A CEDARAPIDS COMPACTOR prepared this road for paving

A good foundation means a good road with a long life expectancy. On this road, vibratory compaction to the proper density has furnished a substantial foundation to assure greater permanent structural strengths in large load bearing capacities. Road maintenance here is materially reduced.

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OBTAINED 90% OF MODIFIED AASHO COMPACTION IN

One coverage!"

ON McGEE-TYSON AIR FORCE BASE

THE JOB — to compact 2 million yards of earth to 90% and 97% of modified AASHO for runways, aprons, taxiways and air force buildings.

TYPE OF SOIL — predominantly undesirable fat clay with small percentages of weathered chert, and high moisture conditions.

"... that's why we buy CEDARAPIDS EQUIPMENT"

says **C. M. HART,** Vice President for HARRISON CONSTRUCTION CO., Alcoa, Tenn.

"IN our book, there have been few, if any, earth construction projects that experienced the fat clay, high moisture conditions existing at this airfield site. Using only sheepsfoot rollers at first, we discovered that on fills with soils near optimum moistures, and on 4" lifts, a minimum of 6 passes were required to develop soil densities of 90% modified AASHO, and a minimum of 10 passes were required to reach densities conforming to the 97% requirements.

"But when we used the Cedarapids Model 60 Compactor on all fill areas, where moisture ran from 3 to 7% over optimum, a minimum of 3 passes for the sheepsfoot rollers *followed by one complete coverage of the Compactor* assured densities of 90% of the required compaction values. Two additional coverages were sufficient to assure 90% of modified AASHO compaction. This was on the specified 4" lift depths, although the Compactor will effectively compact 12" to 36" lifts."

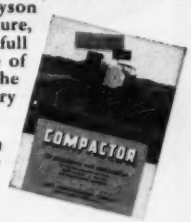
IT'S THE *ONLY* VIBRATORY RUBBER-TIRED COMPACTING UNIT AVAILABLE!

There's nothing like it!

AN ENTIRELY NEW PRINCIPLE . . . WEIGHT PLUS *VIBRATION* . . . PERMITS *MORE COMPACTION THAN EVER BEFORE POSSIBLE* . . . IN FEWER PASSES . . . AT LOWER COST. THE CEDARAPIDS COMPACTOR OFTEN *EXCEEDS* SPECIFICATION DENSITIES OTHER TYPES OF ROLLERS CANNOT REACH!

HERE'S HOW THE CEDARAPIDS COMPACTOR GETS RESULTS!

The Cedarapids Compactor operates on an entirely new principle... the flotation of heavy loads without lateral soil displacement, aided by a powerful compacting vibratory thrust through the pneumatic tires. This vibratory action does more than just press the soil down ... it actually rearranges the soil particles, forcing out moisture and eliminating air voids to increase cohesion and mechanical bond. The rate of vibration, tire pressures and weight may be varied to meet specific soil conditions. On the McGhee-Tyson AFB job it was found that 75-lbs. tire pressure, 1200 cycles per minute rate of vibration, the full 30 ton weight of the unit, and 2 mph rate of travel applied an impact-compaction to the soil area under each tire approximately every 1½" of travel.



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It gives descriptive details and specifications of both the Model 60, weighing 60,000 lbs. and the Model 25, weighing 25,000 lbs., plus many typical job test reports.

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IOWA MANUFACTURING COMPANY

Cedar Rapids, Iowa, U.S.A.

pass through the body, they are released into the atmosphere through ports at the upper rear portion of the body sides.

Proper capacity balance of the off-highway truck with a loading shovel is extremely important to get the most effective low-cost haulage. A rule of thumb is to have the hauling unit capacity four or five times shovel-dipper capacity.

Typical field operations with trucks and shovels show a range of three to eight passes of the shovel bucket into the truck body. The following table gives the usual shovel sizes found in the field for each size of rear-dump truck.

Size	*Truck-Body Size*	*Shovel-Bucket Size*	*Number of Shovel Dippers to Fill Truck Body*
10-ton truck	6.6 yd	¾ yd to 1½ yd	8 to 4
15-ton truck	10 yd	1½ yd to 3 yd	7 to 3
22-ton truck	15 yd	2½ yd to 5 yd	6 to 3
34-ton truck	25 yd	4 yd to 7½ yd	6 to 3
50-ton truck	32 yd	6 yd to 11 yd	5 to 3

NO TIME LOST!
LOADING OR LAYING ITS LOAD
A STANDARD STEEL PRESSURE DISTRIBUTOR GIVES EQUAL CIRCULATION THROUGHOUT THE SPRAY BAR FOR A UNIFORM SURFACE FROM CURB TO CURB FOR LONGER WEAR
STANDARD STEEL
PRESSURE DISTRIBUTOR
The Model 424 can be loaded in quick time for a "fast getaway". A two-way cleaning system guarantees a clean spray bar at the end of the day. First, the material is sucked out of the bar and back into the tank. Then by turning one small valve, cleaning solvent is released into pump and spray bar (without contaminating the asphalt in the tank). No time lost in tinkering — no time lost in loading — Standard Steel 424 keeps going all day long far ahead of the "gravel gang"
WRITE FOR CATALOG 424
OTHER PRODUCTS OF STANDARD STEEL
Maintenance Distributors, Tar Kettles, Patch Rollers, Supply Tanks, Tool Heaters, Asphalt Tools, Street Flushers, Construction Brooms.
Built to the Highest Standard
PD-1
Standard Steel Works NORTH KANSAS CITY MO

Occasionally there are exceptions to the above combinations. For example, a number of rock quarries use a 5-yd shovel to load two to three passes into a 15-ton truck, which has an 11.1-cu yd rock body. However, in large quarries, and rock excavation requiring a 5-yd shovel, new truck installations now turn to the 22-ton truck for better balance between shovel and truck.

In excavating, the key piece of equipment on the job is the loader, or shovel. This is considered so important by some contractors that an extra hauling unit is placed in the line to assure that a truck is always ready for loading at the shovel. Where there is ample working space, trucks are loaded at either side of the shovel. The empty truck pulls in at right angles to the working face on one side of the shovel, while another unit on the opposite side is being loaded. In this fashion, the shovel swings only 90 deg or less and maximum output it obtained.

Moderate Haul Speed

Since the rear-dump truck inherently is well suited for operation on heavy adverse grades, gear ratios of rear axle and transmission limit the haul speed to 25 to 30 mph maximum. Typical rear-dump application finds the haul distances from 1,000 to 7,500 ft one way, although there are rear-dump applications where hauls may be 3 to 5 mi. The longer hauls are found in mining-type operations rather than heavy construction, earthmoving or roadbuilding. In general, long hauls have moderate grades and well-kept haul roads so that a tractor-trailer unit, which hauls more payload per trip, may be used profitably.

On a haul where adverse grades are encountered, the contractor often has the problem of constructing a grade which will fit the truck for most economical hauling and for adequate production from each hauling unit. Adverse grades generally fall between 5 and 10%. Real hauling economies can be effected by closely analyzing performance characteristics of the hauling unit and closely matching the haul road grades to suit.

Manufacturers can provide the grade ability, performance and road speed in each transmission gear of their units. This performance and speed depend upon the amount of horsepower available from the engine, the transmission gear ratios and number of speed

BODY SIZES INCREASE from right to left: 15-ton, 22-ton, 34-ton, 50-ton rear-dumps used on the Minnesota iron ranges.

selections in the transmission, the rear-axle ratio, the loaded radius of the drive tire and the gross weight.

As an example, here is a 15-ton rear-dump with 190-hp engine and 5-speed transmission; total gross weight, loaded, is approximately 60,000 lb. Net grade ability of this unit is as follows, allowing a rolling resistance for the haul-road surface of 40 lb per ton, or 2%:

	MPH	*% Grade Ability*
5th gear	26.4	2
4th gear	16.7	4
3rd gear	9.5	8
2nd gear	5.0	17
1st gear	2.5	35

Therefore, in this truck, the grade should be 4% to get a speed of about 16 mph.

If the adverse grade is set at 5, 6 or 7%, the truck has to negotiate these grades in third gear at 9.5 mph, whereas the same "vertical lift" could be accomplished on an 8% grade over a shorter distance and at no change in the haul speed of 9.5 mph. Therefore, it would be economical to construct the grade at 8% providing the haul road is maintained well. Operators would normally reduce this to a 7% grade to allow a reserve for minor changes in road surfaces.

Vehicle speed in mph is calculated as:

$$\frac{\text{Net hp at drive wheel} \times 375}{\text{GVW in tons } (40+20x\% \text{ grade})}$$

Net horsepower at the drive wheels = maximum engine horsepower at governed speed x .81. This considers a 10% loss in engine efficiency due to driven accessories, the fan, air compressor, hydraulic pump and generator. Another 10% is deducted for friction losses in the truck chassis.

Each percent of grade is equivalent to 20 lb of rim pull per ton of gross weight. For hauling equipment normally operated over well-maintained haul roads, a figure of 40-lb-per-ton rolling resistance is included in the above formula. This

(Continued on page 80)

Floor cutting in industry for machine installation.

Cutting contraction joints on new airport construction.

SAWING CONCRETE SAVES TIME, LABOR MAKES REPAIRS PERMANENT . . . TRI-LINE OPERATION IS ECONOMICAL . . . FAST . . . EASY

Highway officials and contractors everywhere are recognizing the importance of concrete sawing for faster, low-cost maintenance . . . for *contraction joints* on new pavement construction. Sawing with a Tri-Line first saves on labor cost . . . second, produces tight joints that will not spall, eliminating all after-maintenance headaches. Before you buy any saw, ask for a free Tri-Line demonstration on the job. You'll see why Tri-Line has been proclaimed "Best by Test."

Only Tri-Line Gives All These Advantages!

1. Exclusive three-wheel undercarriage prevents tilting, eliminates blade bind and excessive wear.
2. Direct-acting hydraulic control permits quick, effortless depth-of-cut adjustments.
3. Maximum maneuverability afforded by tricycle design. Turns within its own length without jockeying.
4. Sturdy construction means less vibration, less blade wear. A full 700 pounds of ruggedness.
5. Thirty-gallon tank provides water when supply is inconvenient. Can be attached to hydrant if desired.
6. Vital engine parts protected from blade spray. No shut-downs due to engine "drowning."
7. Abundant power from the 13 h.p., two-cylinder Wisconsin air-cooled engine for full-depth, full-speed cutting.
8. Double-ended arbor permits cutting on either side of the machine . . . in places normally inaccessible.
9. Tri-Line blades are double-bonded, scientifically designed for fast, clean-cutting operation.

Write for FREE Illustrated Brochure which gives complete specifications and construction details, and the name of our nearest representative, without obligation.

Dealer Inquiries Invited!

Manufactured By

Tri-Line CO.

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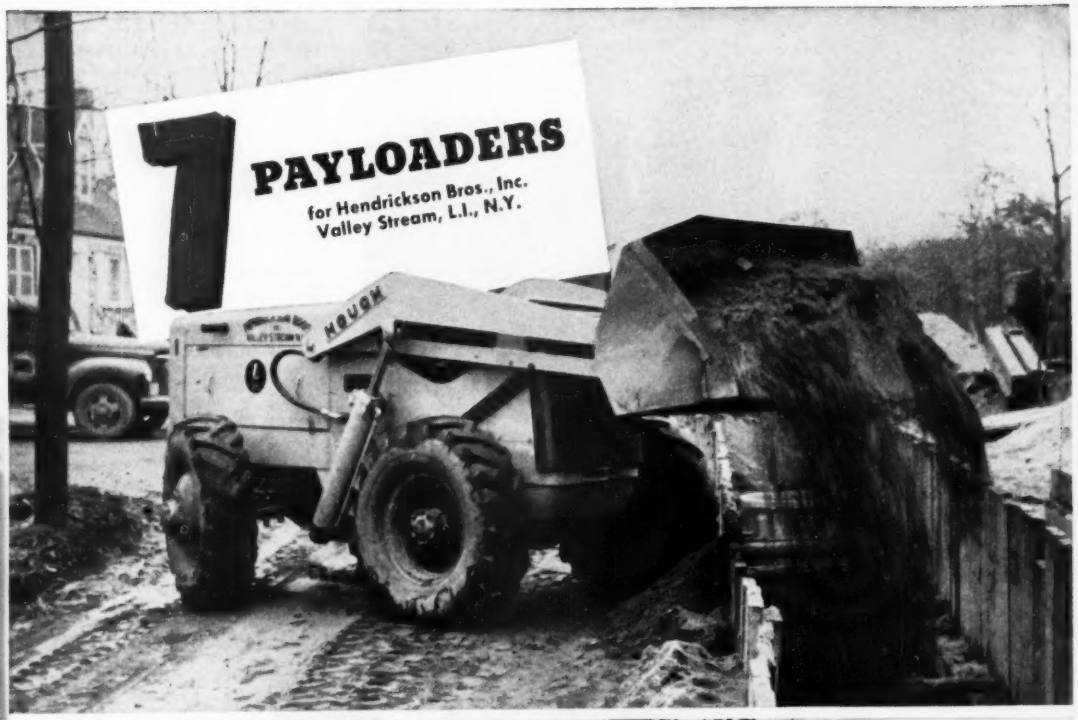
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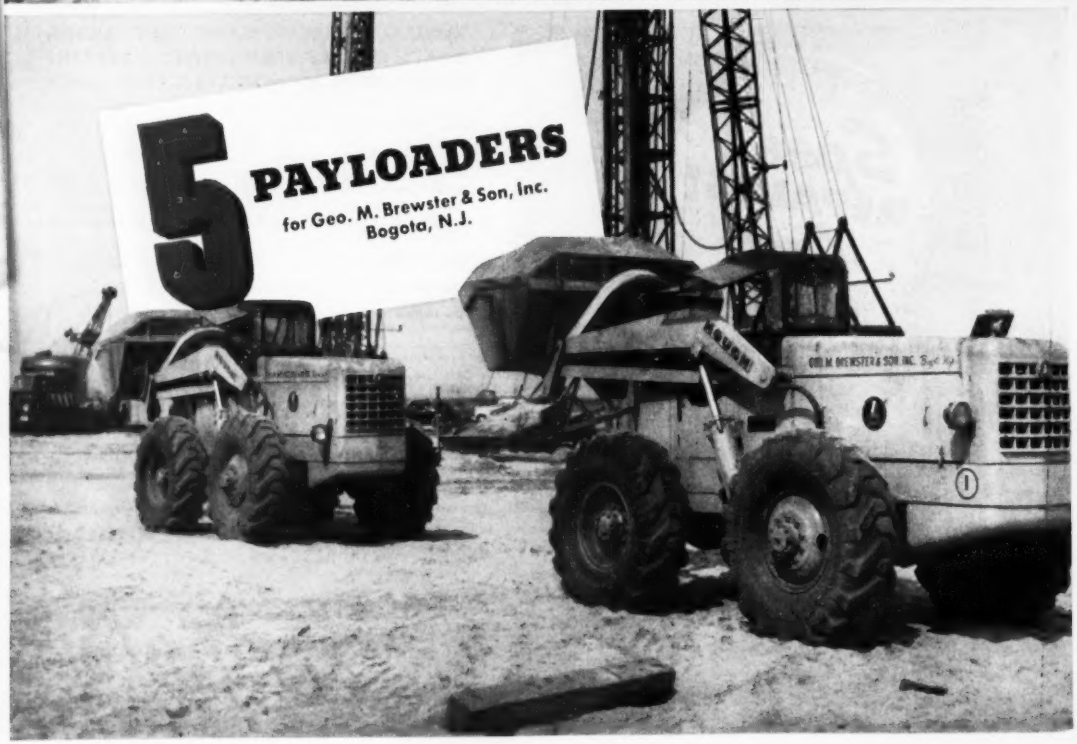
PAYLOADERS
for Hendrickson Bros., Inc.
Valley Stream, L.I., N.Y.
HOUGH


5
PAYLOADERS
for Geo. M. Brewster & Son, Inc.
Bogota, N.J.
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65 for State Highway and Public Works Commission of North Carolina

62 for Texas State Highway Department

34 for Indiana State Highway Department

11 for Atlas Constructors, New York, N. Y.

9 for Los Angeles County, Cal.

7 for J. A. Jones Construction Co., Charlotte, N. C.

Ask the fleet owners!

It's a sure sign of satisfactory performance when customers make repeat purchases again and again as they do with "PAYLOADERS" . . . sure proof that it pays to buy a tractor-shovel designed and built as a complete unit specifically for tractor-shovel service.

It's the kind of satisfactory performance you too can expect when a "PAYLOADER" is on *your* job. It's the finest equipment investment you can make — the most versatile machine on your equipment roster . . . the only tractor-shovel with more than 32 years of bulk material handling experience behind it.

"PAYLOADERS" are tops in the field — and they're backed by a world wide network of top flight distributors with complete parts stocks and the finest of service facilities . . . to keep your jobs moving wherever they may be.

The "PAYLOADER" is available in eight sizes with bucket capacities from 12 cu. ft. to 1½ cu. yd. — and with a choice of front wheel drive, rear wheel drive or four wheel drive models to best fit your needs. The Frank G. Hough Co., 706 Sunnyside Avenue, Libertyville, Illinois.

WRITE for the name of your Hough Distributor and literature on any of these "PAYLOADERS:" 4-wheel-drive Models HM 1½-yd. or HR 1-yd.; Rear-wheel-drive Models HY 1¼-yd., HF ¾-yd. or HE ½-yd.; Front-wheel drive Models HAH 15 cu. ft. or HA 12 cu. ft.

SAY "HUFF"

PAYLOADER®

THE FRANK G. HOUGH CO. SINCE 1920

DOES A LOT OF JOBS
for a
Lower Investment

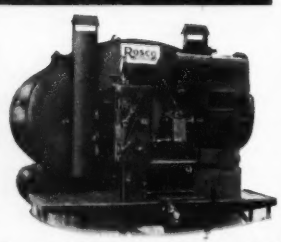
ROSCO Model RHU
MAINTENANCE
DISTRIBUTOR

General Purpose Unit for Handling All Types of Bituminous Materials

This efficient machine is designed for contractors, including those who want to get started in road work. Rosco Model RHU is also in demand by cities, towns, counties, state and federal authorities because it can maintain streets and make road repairs at low cost. This machine will do a variety of jobs with such features as loading . . . transferring . . . spraying . . . handspraying . . . circulating . . . reverse suction . . . cleanout . . . gravity draw-off. For mounting on trucks of 60" to 72" from back of cab to center rear axle. Built in 800 and 1000 U. S. gallon capacities.

Ask your Rosco dealer for complete specifications, or write the factory.

ROSCO
MINNEAPOLIS
ROSCO MANUFACTURING CO.
3118 Snelling Ave. • Minneapolis 6, Minn.



Burners and all operating equipment mounted at rear. Stationary or shifting type spraybars available in three styles.

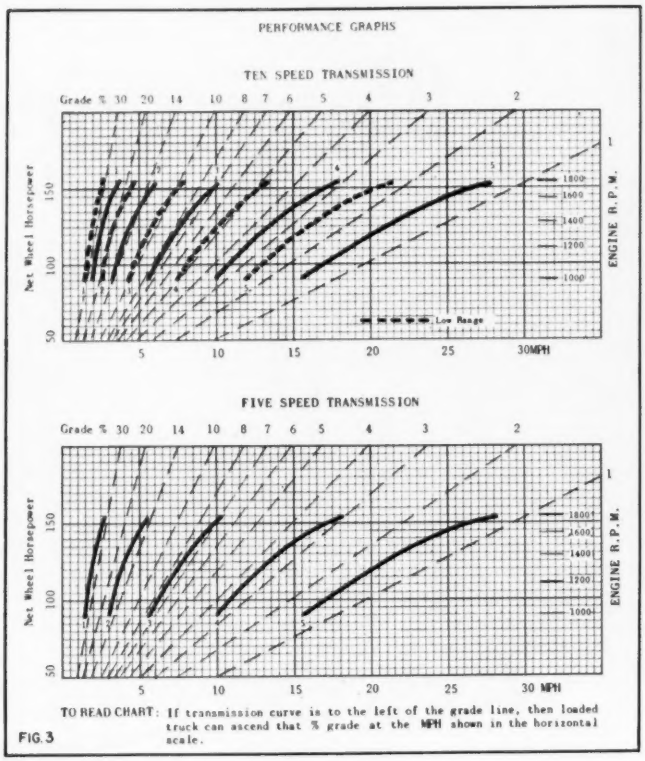


FIG. 3

considers that the truck is working against the equivalent of a 2% grade, even when hauling on the level, because of road resistance. While this is somewhat of an empirical figure and will vary according to tires and basic vehicle design, it is a figure representative of truck haul roads in off-highway service under well-maintained conditions.

Applying this formula to the 15-ton truck with a gross weight of 30 tons and 190-hp engine rating, results for a 4% grade are as follows:

$$\text{Mph} = \frac{(190\text{x}.81)\text{x}375}{30\ (40+20\text{x}4)} = 16 \text{ Mph}$$

Now change rolling resistance from a 40-lb-per-ton to 80-lb-per-ton rolling resistance. This would be soft dirt or a poorly maintained dirt surface.

$$\text{Mph} = \frac{(190\text{x}.81)\text{x}375}{30\ (80+20\text{x}4)} = 12 \text{ Mph}$$

However, as shown in the performance of this unit with a 5-speed transmission, there is no gear ratio available in the transmission which gives this combination of speed and grade ability. Thus, an increase in road-rolling resistance from 40 lb to 80 lb actually forces a reduction in road speed of the truck from 16.7 mph to 9.5 mph, or a 43% loss.

But inbuilt characteristics of hauling units also have to be considered. A truck with a 10-speed transmission or torque converter offers a wider ratio range to match power output to grade and road conditions.

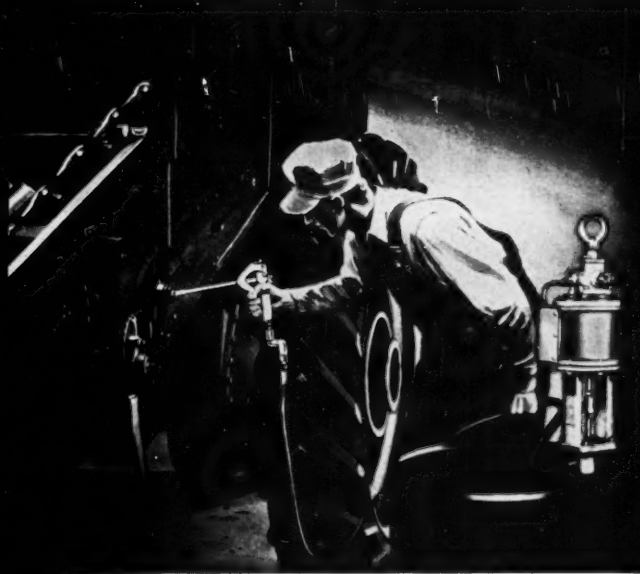
The performance graphs in *Fig. 3* illustrate the additional speed obtainable on various grades from a 10-speed transmission, compared to the same 15-ton truck with a 5-speed transmission. They illustrate the importance of carefully matching new truck equipment to an existing fixed grade, or constructing the grade to suit the trucks.

What methods are used to select the proper size of rear-dump truck for a job?

Assume that a 2½-yd shovel has a maximum output for a 60-min-hr, 90-deg shovel swing, of 200

(Continued on page 84)

ANOTHER JOB MADE EASIER WITH ALEMITE "FRICTION FIGHTERS"



Speeding, simplifying lubrication at the central shop!

Headquarters for big rigs in trouble . . . that's the Central Shop!

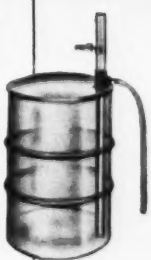
Nowhere else is smooth running operation so important, so necessary. Heavy equipment in for overhaul before the start of a new job. Big rigs pulled in for major repairs. Critical parts and assemblies being rushed out for emergency use in the field.

Whatever the job, thorough lubrication is a *must* on every work sheet . . . because minutes of care taken in the central shop can save hours in the field! Here—as throughout the construction industry—Alemite "Friction Fighters" play a vital part—saving time, saving work, saving money.

Take, for example, the high efficiency Alemite "Powerhouse" Barrel Pump shown above. It provides big volume, high pressure lubricant delivery direct from original 400-lb. drums. It can serve one outlet or be piped throughout the shop—enabling operators to move from machine to machine . . . flushing out dirt and old grease . . . lubricating the tightest, biggest bearings with an ease never before possible.

Featuring Pilot Operated Exhaust Valves—exclusive with Alemite—these "Powerhouse" Barrel Pumps offer extra power, extra output. Twelve models for all lubricants, air pressures and pump mountings.

Check these features. Check the other work-saving Alemite equipment shown here. Try them. Put them to work. They'll help you return more equipment to the line, faster, better protected than ever before!



Waste Free! Mess Free!

Alemite Transfer Pumps

Cut man hours 63% for every 100 lbs. of lubricant transferred

Keep lubricants "refinery clean" from barrel to bearing

Efficient Alemite Transfer Pumps eliminate costly hand transferring. Eliminate all risk of lubricant contamination. Assure quick, waste free, mess free loading of bucket pumps and power guns. Shown is Alemite Model 7216-A. Handles oil or grease. Air operated pump empties a 100-lb. drum in less than a minute!

Tops in Design . . . Quality . . . Service!

Genuine Alemite Fittings

Tough, case-hardened body

Original equipment on a great majority of construction equipment! These fittings—Hydraulic and Button Head—are genuine Alemite fittings. Designed by Alemite, perfected by Alemite to give you a better fitting for every job. Insist on them. Standardize with them. Be sure you have plenty in stock. Be sure you specify the genuine Alemite.

For Power Lubrication on the Job!

Alemite Portable Service Stations

Standard duty units for 100-lb. drums sectionalized to meet your needs

Featuring the famous Alemite "Atomic" Pump, these units deliver lubricant direct from 100-lb. drums. Assembled with pumps, up to 5 reels, delivery hose and air compressor. The matching steel bases can be fastened together with side rails . . . mounted on a small truck or trailer and quickly driven from place to place.

Get this FREE book!

Send today for free illustrated catalog describing this equipment. Write to Alemite, Dept. F-62, 1850 Diversey Parkway, Chicago 14, Ill.

ALEMITE

A PRODUCT OF SW STEWART WARNER

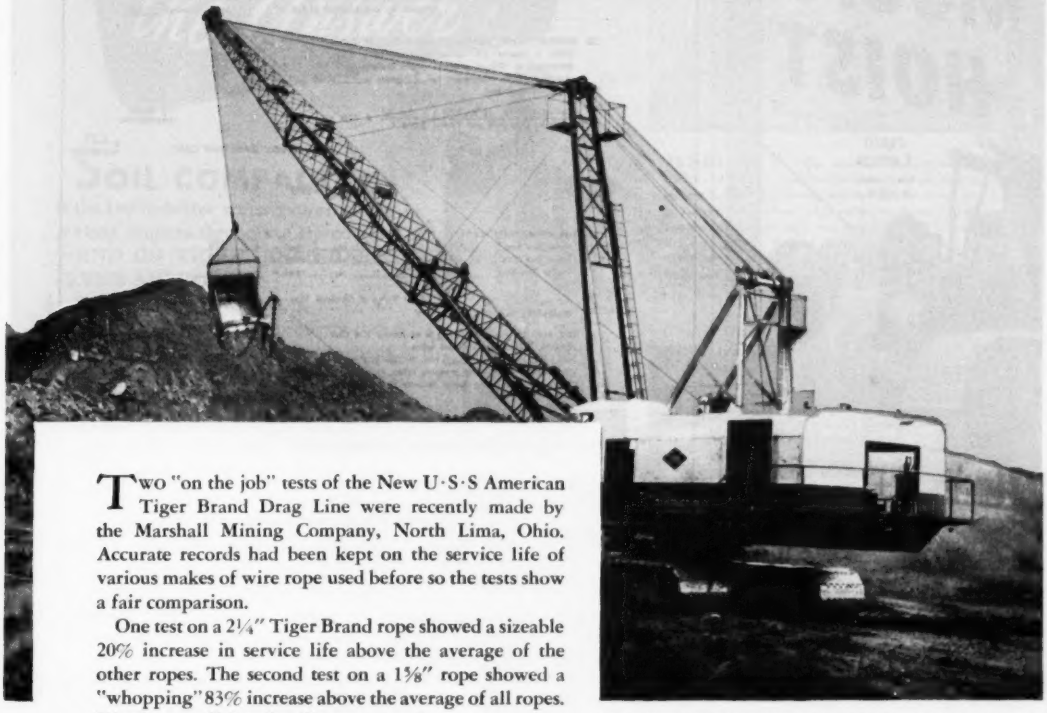
New American Tiger gives 20% to 83%

20% INCREASE IN WIRE ROPE LIFE. When this 14 cu. yd. drag line was equipped with the new Tiger Brand 2¼" Drag Line, the average service life of the rope was increased 20% over other brands tested.

SAVES MONEY AND TIME—INCREASES PRODUCTION. This new Tiger Brand Drag Line Rope quickly pays for itself through increased life and greater production. Try it next time you have to replace your drag rope.

USS AMERICAN TIGER BRAND WIRE ROPE UNITED STATES STEEL

Brand Drag Line increase in service life



Two "on the job" tests of the New U·S·S American Tiger Brand Drag Line were recently made by the Marshall Mining Company, North Lima, Ohio. Accurate records had been kept on the service life of various makes of wire rope used before so the tests show a fair comparison.

One test on a 2¼" Tiger Brand rope showed a sizeable 20% increase in service life above the average of the other ropes. The second test on a 1⅜" rope showed a "whopping" 83% increase above the average of all ropes. Digging conditions in all cases were the same.

This new Tiger Brand Drag Line was designed especially to resist the severe operating conditions imposed by this class of service.

The use of this new rope on your drag line will mean substantial savings in your wire rope costs. It will cut your down time and help to keep machines at top capacity.

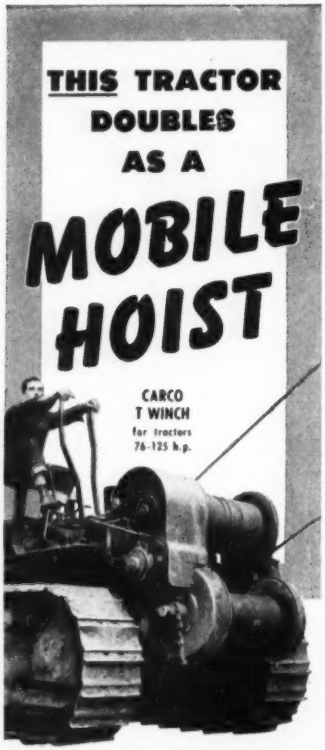
DRAG LINE LIFE INCREASED FROM 600 HOURS TO 1100 HOURS —83%. The best service on this drag line using 1⅜" rope averaged 600 hours for other brands of rope. But with the new U·S·S Tiger Brand Rope, service life jumped to 1100 hours—almost double the previous average.

U·S·S AMERICAN TIGER BRAND WIRE ROPE

AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL COMPANY, GENERAL OFFICES: CLEVELAND, OHIO
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO · TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA., SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

Excellay Preformed

UNITED STATES STEEL



In choosing a Carco winch for all-round utility, consider the *added* advantages of a multiple-drum model, which enables you to rig an efficient hoist, dragline, slackline or cableway on short notice—anywhere you can station the tractor. Compactly built of light, tough alloy steel, it seldom requires servicing and permits near-normal use of the tractor for other purposes. See your tractor dealer, or write nearest Carco factory branch, for full information on the Carco winch approved for *your* tractor, and suited to *your* type of operation.

CARCO
WINCHES
FOR ALL INDUSTRIAL TRACTORS
PACIFIC CAR AND FOUNDRY COMPANY
RENTON, WASHINGTON — Branches at Portland, Oregon, and Franklin Park (Chicago), Illinois

ESTIMATED HOURLY OWNERSHIP AND OPERATING COSTS

Model 22-Ton Truck

OWNERSHIP COSTS

1. DEPRECIATION:*

Purchase Price	$ 30,130
Extras	$
Freight – (46,000 # @ $1.50/100 #)	$ 690
Delivered Price	$ 30,820
Less Original value of tires (see No. 3 below)	$ 4,764
Total Amount to be Depreciated	$ 26,056

Divided by depreciation period – 10,000 Hours = $ 2.60

2. INTEREST, TAXES, INSURANCE and STORAGE:
(10% = Interest 6%, Taxes 2%, Ins. & Strg. 2%)
Estimated at 10% of average yearly investment.
Average yearly investment for 5 years is 60 % of delivered price.

$$\frac{\text{Delivered Price } (\$30{,}820) \times (60\ \%)}{\text{Hours Operated per Year } (2{,}000)} \times 10\% = \$\ 0.62$$

A. TOTAL HOURLY OWNERSHIP COST $ 3.22

OPERATING COSTS

3. TIRE REPLACEMENT COST.**

Front Tire Size	11.00 x 24 – 20	ply; 2 reqd. –	$ 924
Drive Tire Size	18.00 x 24 – 24	ply; 4 reqd. –	$ 3,840
Trailer Tire Size	–	ply; reqd. –	$

Total Value of Original Tires – $ 4,764
Divided by Estimated Tire Life of 3,000 Hours = $ 1.59

4. TIRE REPAIRS, estimated at 15 % of Hourly Tire Cost	$ 0.20
5. REPAIRS, including parts and labor	$ 1.24
6. FUEL, est. consumption 4.5 gal./hr. @ 14¢/gal.	$ 0.63
7. OIL, GREASE – including greasing labor.	$ 0.25
8. OPERATOR – including Social Security and Compensation	$ 1.50
B. TOTAL HOURLY OPERATING COSTS	$ 5.41
TOTAL ESTIMATED HOURLY OWNERSHIP AND OPERATING COST	$ 8.63

* No allowance made for salvage or resale value.
** Includes Tire, Tube, and Tax.

EUCLID ROAD MACHINERY COMPANY
Cleveland 17, Ohio

FIG. 4

bank yards, working in poorly blasted rock. A contractor wishes to haul away the maximum shovel output over a 2,500-ft level haul to a fill. Roads are well maintained with two-way traffic and ample working areas at the shovel and on the fill. How many trucks, of what size, are required and what is the cost per yard haulage estimate?

1. Balance the shovel size with the truck-body size. In this case, the 15-ton or the 22-ton truck is to be considered.

22-ton truck = 6 shovel passes into a 15-yd body

15-ton truck = 4 shovel passes into a 10-yd body

Bank Cu Yd per Truck each trip

(Divide rated payload of truck in lb by the bank cu yd weight of rock which is 4,000 lb/yd

15-Ton Truck	*22-Ton Truck*
7.5 Bank yd	11 Bank yd
11.2 loose or heaped	16.5 loose or heaped

2. Strike a time cycle for each truck size to determine the number of units required.

	15 ton	*22 ton*
Load at rate of 200 yd per hr or average 3.3 yd per min in blasted rock	2.3 min	3.4 min
Haul 2,500 ft at 15 mph average	1.89	1.89
Turn and dump	1.3	1.3
Return empty at 17.5 mph	1.62	1.62
Spot at shovel	.3	.3
Trips per 50 min hr (83% operating efficiency)	6.7	5.9

Net Shovel output = 200 yd maximum x .83 = 166 bank yd net at 50 min hr.

Yards per hour, one truck 7.5 x 6.7 trips = 50 yd 11 x5.9 trips = 65 yd.

Number of trucks required for 166 bank yd from shovel per 50 min hr: 3.3 or 4 trucks; 3 trucks

3. Consider the balance of the cycle time for hauling only compared to loading time, so that the shovel is

(Continued on page 88)

ON OUTSTANDING JOBS ACROSS THE NATION

BARCO *is the Answer!*

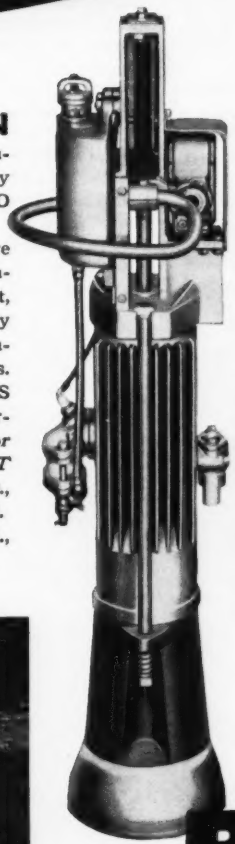
TEXAS DAM—On projects costing millions of dollars, it pays to use construction methods that insure permanence. That's why soil compaction is a very important factor in the construction of dams. This picture shows Barco Rammers working on the Whitney Dam Project on the Brazos River near Whitney, Texas. *Contractors:* L. P. Reed, Inc., and Martin & Grace, Inc., both of Clifton, Texas.

SOIL COMPACTION

is the key to *better construction* on important projects throughout the country —AND ON THESE JOBS, BARCO IS THE ANSWER!

Contractors and engineers, alike, are finding that unless soil is properly compacted during construction, settlement, erosion, and structural damage can easily develop in areas near abutments, foundations and walls, and other critical points.

This is where BARCO RAMMERS quickly pay for themselves! See for yourself—ask for a demonstration. *Send for our latest catalog and new "COST DATA" Bulletin.* BARCO MFG. CO., 1812G Winnemac Ave., Chicago 40, Ill. *In Canada:* The Holden Co., Ltd., Montreal, Canada.



OHIO FACTORY BUILDING—The Austin Company recently attracted nation-wide attention with the design and construction of an ultra-modern plant for The Lincoln Electric Company in Cleveland, Ohio. Evidence of the high standards of construction maintained by The Austin Company can be seen in the use of Barco Rammers in the above picture. The Austin Company has many Rammers in use on building projects throughout the country.

MISSOURI HIGHWAY—The State of Missouri has been one of the leaders in studying the value and importance of soil compaction on highway construction for preventing settling, washouts, and erosion. This picture shows Barco Rammers used by Fred Weber Contractors, Inc., St. Louis, on Missouri's famed *Natural Bridge Road.*

BARCO

"Pegson" Gasoline RAMMER

For Soil Compaction Close to Walls, Culverts and Abutments — in Trenches, Ditches

FREE ENTERPRISE — THE CORNERSTONE OF AMERICAN PROSPERITY

When you can't afford "down time"

that Pioneer Edge

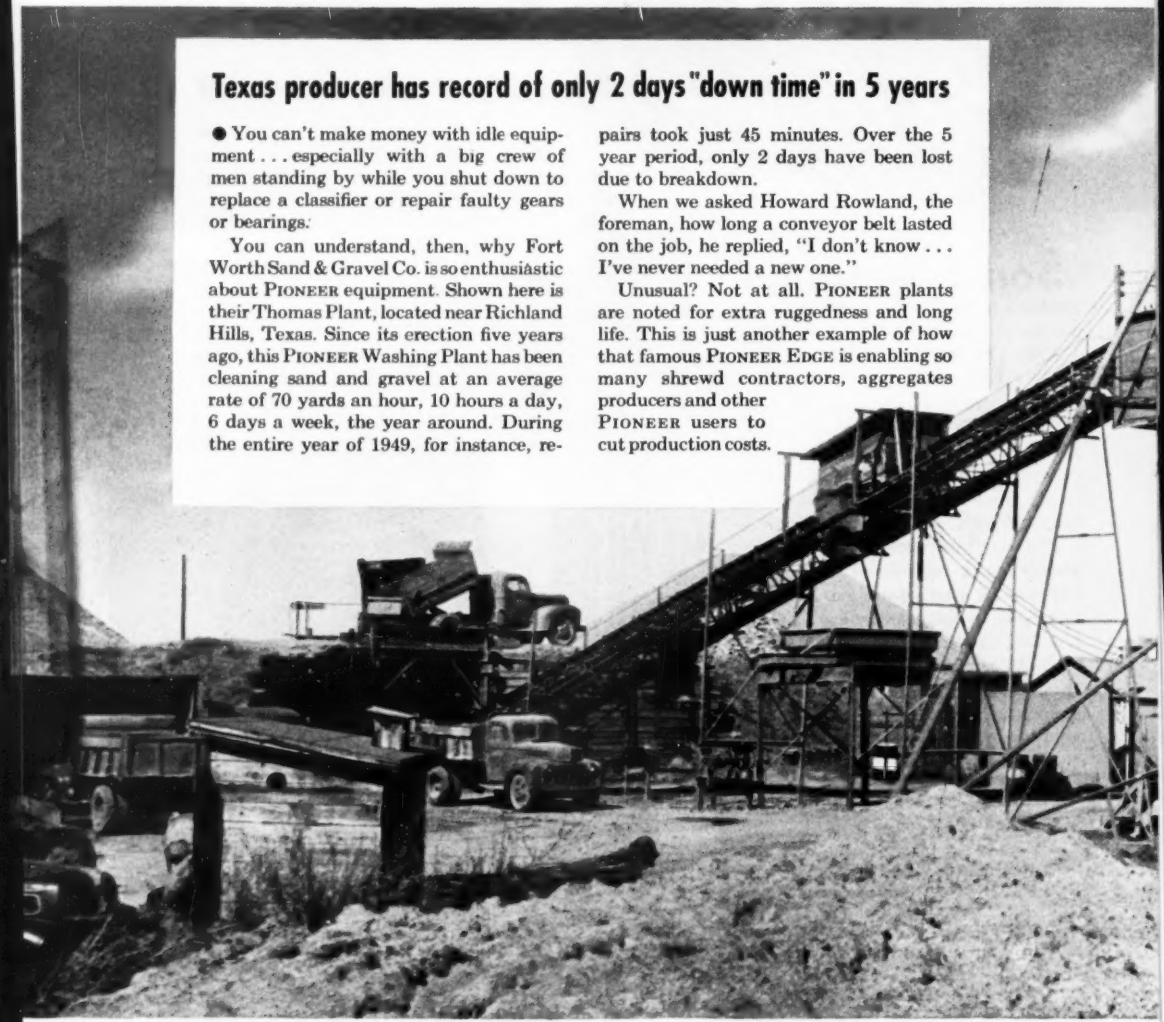
Texas producer has record of only 2 days "down time" in 5 years

● You can't make money with idle equipment . . . especially with a big crew of men standing by while you shut down to replace a classifier or repair faulty gears or bearings.

You can understand, then, why Fort Worth Sand & Gravel Co. is so enthusiastic about PIONEER equipment. Shown here is their Thomas Plant, located near Richland Hills, Texas. Since its erection five years ago, this PIONEER Washing Plant has been cleaning sand and gravel at an average rate of 70 yards an hour, 10 hours a day, 6 days a week, the year around. During the entire year of 1949, for instance, repairs took just 45 minutes. Over the 5 year period, only 2 days have been lost due to breakdown.

When we asked Howard Rowland, the foreman, how long a conveyor belt lasted on the job, he replied, "I don't know . . . I've never needed a new one."

Unusual? Not at all. PIONEER plants are noted for extra ruggedness and long life. This is just another example of how that famous PIONEER EDGE is enabling so many shrewd contractors, aggregates producers and other PIONEER users to cut production costs.

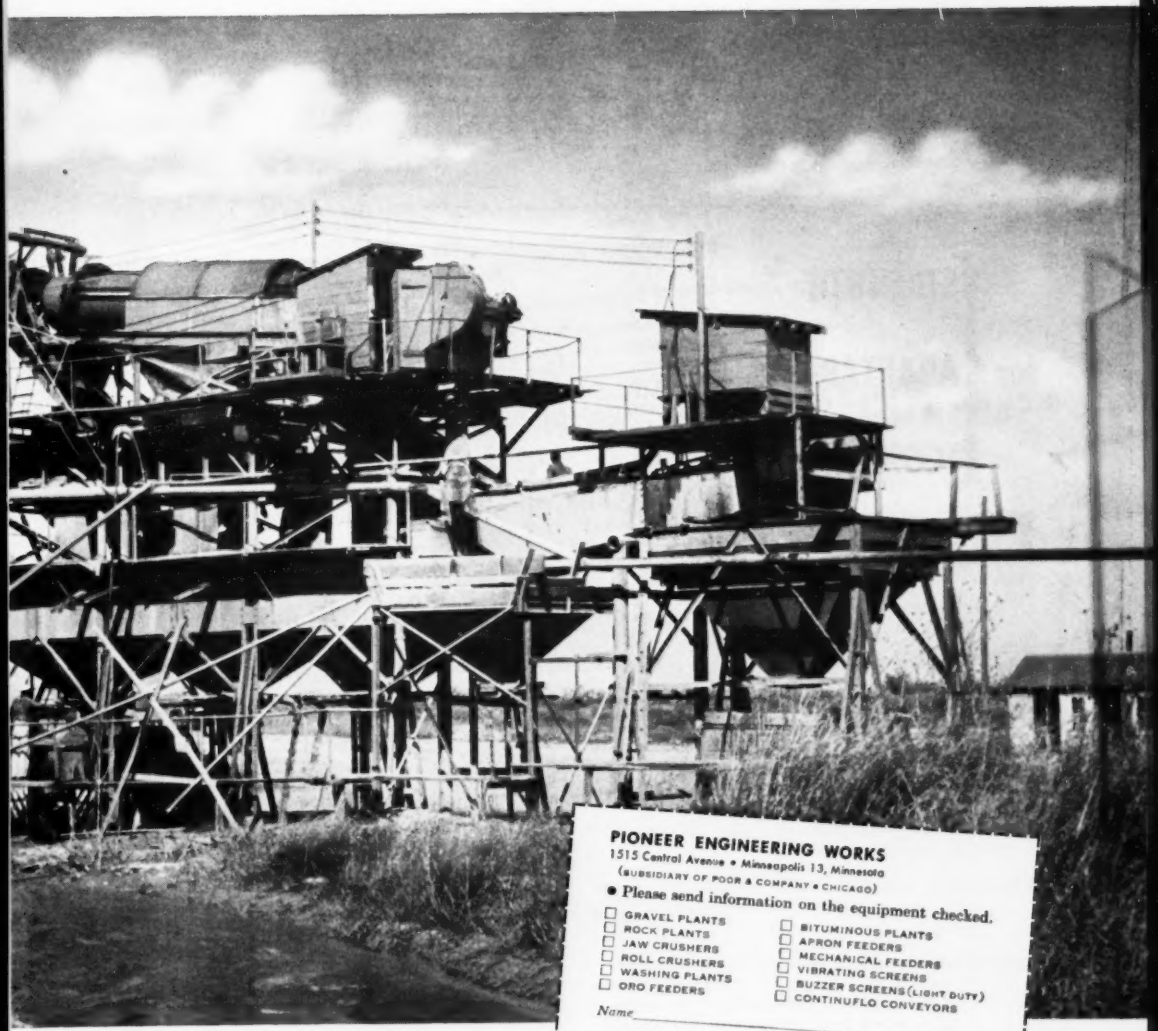


BUY BOTH!
HIGHER OUTPUT
LOWER UPKEEP

Pioneer

Continuflo EQUIPMENT

keeps your plant going



Two more Pioneer Plants guarantee Fort Worth Sand & Gravel Company low cost production.

"Kingsbury plant", installed 1949

"Britain plant", installed 1950

PIONEER ENGINEERING WORKS
1515 Central Avenue • Minneapolis 13, Minnesota
(SUBSIDIARY OF POOR & COMPANY • CHICAGO)

• Please send information on the equipment checked.

- ☐ GRAVEL PLANTS
- ☐ ROCK PLANTS
- ☐ JAW CRUSHERS
- ☐ ROLL CRUSHERS
- ☐ WASHING PLANTS
- ☐ ORO FEEDERS
- ☐ BITUMINOUS PLANTS
- ☐ APRON FEEDERS
- ☐ MECHANICAL FEEDERS
- ☐ VIBRATING SCREENS
- ☐ BUZZER SCREENS (LIGHT DUTY)
- ☐ CONTINUFLO CONVEYORS

Name_____

Company_____

Address_____

City_____ Zone____ State_____

not idle after loading the last unit in a fleet, while awaiting the return of the first truck loaded out.

In this case, there are enough trucks in either the 15- or 22-ton fleet to balance with the loading shovel, and the first truck can return to the shovel in ample time to eliminate delays due to insufficient number of hauling units.

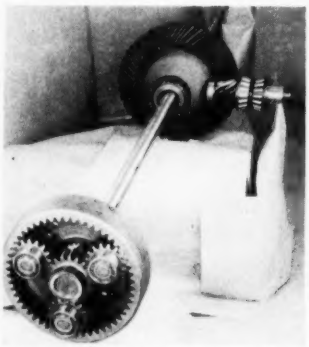
4. Next, the estimated cost per yard can be calculated. The fundamental principles for estimating Equipment Ownership and Operating Costs have been set forth in Article No. 4 of this series and need not be reviewed here.

As shown in the accompanying charts (*Figs. 4 and 5*), the estimated cost per hour is:

	22-Ton Truck
Three trucks x $8.63 per hr	$25.89
Cost per yard of moving 166 bank yd of rock per 50 min hr	15.6¢
Total Fleet Investment	3 x $30,130 = $90,390
	15-Ton Truck
Four trucks x $7.59 per hr	$30.36
Cost per yd of moving 166 bank yd of rock per 50 min hr	18.2¢
Total Fleet Investment	4 x $23,790 = $95,160

In this illustration, three 22-ton trucks haul for a lower cost per yard, entail a lower initial investment, and the job is "balanced". These estimates cover "haulage" only. Selection of proper truck size for a given job is affected by hauling distance, grades, proper balance of number of hauling units with the shovel, and the cost-per-yard estimate, in addition to shovel size.

	15-ton Truck	*22-ton Truck*
Loading time for all trucks other than No. 1 in fleet	3 trucks x 2.3 min Load Time = 6.9 min	2 trucks x 3.4 min Load Time ea. = 6.8 min
Haul cycle only of truck No. 1 after loading	7.4 min — 2.3 = 5.1 Cycle	8.5 min — 3.4 = 5.1 Cycle

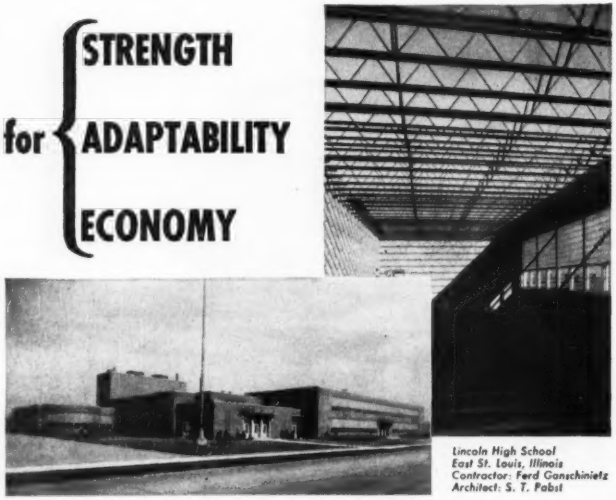


PLANETARY-TYPE AXLE of typical off-highway design. This one is used in the Mack 15-ton.

Graded and well-drained haul roads permitting two-way traffic, with wide radius and good visibility on curves, are important in lowering costs. A motor grader is indispensable for this work and for removing rock spilled from a truck. How many times has a $500 tire been ruined by a rock dropped in the haul road!

Loading area and pit conditions should be ample for truck turnaround so that truck size is not

for { STRENGTH / ADAPTABILITY / ECONOMY



Lincoln High School
East St. Louis, Illinois
Contractor: Ferd Ganschinietz
Architect: S. T. Pabst

Specify **LACLEDE STEEL JOISTS**

FASTER CONSTRUCTION—Light, easily-handled, prefabricated to speed the job.

ADAPTABLE—Laclede Steel Joists combine efficient structural function with architectural versatility.

ECONOMICAL—Laclede Steel Joists assure more room at less cost. High strength *plus* light weight gives substantial savings in foundation and framework. Utility conduits, pipes and lines are easily threaded through the open webs.

Specify these Laclede Products for your construction needs . . . Multi-Rib Reinforcing Bars—Steel Pipe—Welded Wire Fabric—Form and Tie Wire—Spirals—Conduit—Corrugated Steel Centering—Electrical Weld and Gas Tubing.

LACLEDE STEEL COMPANY
St. Louis, Mo.

ESTIMATED HOURLY OWNERSHIP AND OPERATING COSTS

Model 15-Ton Truck

OWNERSHIP COSTS

1. DEPRECIATION:*

Purchase Price	$ 23,790
Extras	$
Freight – (33,800 # @ $1.50/100#)	$ 507
Delivered Price	$ 24,297
Less Original value of tires (see No. 3 below)	$ 3,888
Total Amount to be Depreciated	$ 20,409
Divided by depreciation period –	10,000 Hours = $ 2.04

2. INTEREST, TAXES, INSURANCE and STORAGE:
(10% = Interest 6%, Taxes 2%, Ins. & Storg. 2%)
Estimated at 10% of average yearly investment.
Average yearly investment for 5 years is 60 % of delivered price.

Delivered Price ($24,297) = (60%) X 10% = $ 0.73
Hours Operated per Year (2,000)

A. TOTAL HOURLY OWNERSHIP COST $ 2.77

OPERATING COSTS

3. TIRE REPLACEMENT COST.**

Front Tire Size	13.00 x 24	– 18 ply; 2 reqd. –	$ 796
Drive Tire Size	16.00 x 24	– 24 ply; 4 reqd. –	$ 3,092
Trailer Tire Size		– ply; reqd. –	$
		Total Value of Original Tires –	3,888
Divided by Estimated Tire Life of			3,000 Hours = $ 1.30

4. TIRE REPAIRS, estimated at 15% of Hourly Tire Cost	$ 0.20
5. REPAIRS, including parts and labor	$ 0.98
6. FUEL, est. consumption 1.2 gal./hr. @ 11¢/gal.	$ 0.59
7. OIL, GREASE – including greasing labor.	$ 0.25
8. OPERATOR – including Social Security and Compensation	$ 1.50
B. TOTAL HOURLY OPERATING COSTS	$ 4.82
TOTAL ESTIMATED HOURLY OWNERSHIP AND OPERATING COST	$ 7.59

* No allowance made for salvage or resale value.
** Includes Tire, Tube, and Tax.

EUCLID ROAD MACHINERY COMPANY
Cleveland 17, Ohio

FORM 95-332 REV.

FIG. 5

limited by the necessity of passing other trucks and excavating equipment in restricted quarters.

Side-dump bodies on off-highway trucks are popular in quarries for stripping and rock haulage. Where a fixed dumping point is used at a hopper, the trucks which are not equipped with hydraulic hoist equipment, may be dumped by an overhead independent hoist.

Bottom-Dump Trailers

Bottom-dump tractor-trailers have a wide application in the haulage of free-flowing materials, over medium and long hauls, where grades are moderate and where high flotation may be required in a loading area or on a fill.

The bottom-dump on rubber tires first gained field acceptance in the early '30's in flood control and conservation projects in the Muskingum River Valley of Ohio, and in levee construction on the Mississippi. These early types were gasoline-powered, of 10-yd capacity, and they filled the gap between the slow crawler tractor hauling a track-type wagon and the light highway dump truck.

During those early developmental days it was not uncommon to take in mules and wagons in trade on the sale of new bottom-dump equipment. Contractors were not eager to switch from time-tested crawler-tractor and wagon combinations, and the early rubber-tired machines had to prove themselves as durable, low-cost earthmovers.

The early principles of design still are in effect: Single large tires for maximum flotation; short wheelbase for maneuverability; simplicity of design for low maintenance costs; and universal hitch for good stability and freedom of trailer movement.

Bottom-dumps range in size

(Continued on page 93)

Protect your reputation!

with LAUSON dependability

Folks like the day in, day out ruggedness of LAUSON power. They trust the LAUSON name to give BETTER value . . . an engine with longer life! . . . and they know that LAUSON engines do ANY job with fewer breakdowns . . . less service needs and BETTER results.

with LAUSON sales ability

Any power equipment with the LAUSON engine is backed with over 50 years of leadership and experience . . . and by a great advertising campaign in many of the leading consumer magazines in America. Today, millions of people read about . . . hear about LAUSON, one of the great names in POWER!

with LAUSON service ability

LAUSON engines are the perfect replacement for many power units. Proudly stock a complete LAUSON department for greater profit and service sales. Easy to service . . . LAUSON has a fine network of service dealers thruout the nation . . . many of them also dealers for the world-famed LAUSON outboard motor!

4 CYCLE ENGINES
LAUSON
PORTABLE ENGINES OUTBOARD MOTORS

For Details, Write:
THE LAUSON COMPANY
New Holstein, Wis.
Division of Hart-Carter Company
In Canada: Hart-Emerson Co. Ltd., Winnipeg.

Can you match performance

HAUL one way	TRIPS per hour (per unit)	PAY YDS. per hour (per unit)	Name of Owner	Job Description	Type of Material	Job Conditions
140'	22	110	W. W. Allen Conneaut Lake, Pa.	2 "D's" grading 20,000 yds. for school near Greenville in 12 8-hour days.	Clay, 25% very wet.	Part self-loaded, part mater-patrol push-loaded.
150'	Not counted	125 self-loaded	Griggs County Soil Conservation District Cooperstown, N. D.	1 "D" digging 250-yd. drainage ditch near Aneta.	Sandy loam.	Normal for drainage ditch.
100'-300'	17	Not measured	Macbeth & Company, Inc. Montebello, Calif.	1 "D" supplying sand for gunite filler at Whittier Narrows Dam, Whittier.	Very fine, dry sand.	Selective loading. 1½% max. moisture . . . 25% to pass #100 screen.
200'	30	130 self-loaded	Roy Jones, Contractor Ipswich, S. D.	1 "D" building one 1500-yd dam per day for Edmunds County.	Sandy clay and gravel.	Material sun-baked, extremely dry.
200'	25	137½ self-loaded	Roy Kohl, Contractor Springfield, Ohio	1 "D" grading 45,000 yds. for industrial plant site at Yellow Springs.	Mostly loam, clay, with occasional gravel.	Good weather, level grades.
200'	14	70	J. P. Hollerich Co. LaSalle, Ill.	2 "D's" digging 5000-yd. lake for LaSalle farmer.	Wet gumbo.	"Shutdown" conditions . . . loading belly-deep mud . . . haul up 10% grade.
300'	36	198	Kelly Contracting Company Louisville, Ky.	1 "D" on 80,000-yd. relocation of U. S. 62 from Kuttawa to Kentucky Lake Dam.	Gravel.	Ideal conditions.
300'	24	96	Damodar Valley Corp. Calcutta, India	12 "D's" reclaiming 200,000 acres of wasteland for rice farms at Hazaribagh.	Sunbaked clay.	No haul roads, 130° F., dry, dusty.
300'	22	138 self-loaded	Domres Bros. Manistee, Mich.	1 "D" extending runway from 2200' to 4000' at Manistee's Blacker airport.	Sand and sandy loam.	Poor footing in soft, loose, abrasive material.
350'	23	137½	Great Lakes Const. Co. Cleveland, Ohio	2 "D's" on 25,000 cu. yd. widening of Cleveland's Lake Shore Highway.	Sandy topsoil.	Return up 12% grades.
300'-400'	23	125 self-loaded	C. H. Wilhelm Faulkton, S. D.	1 "D" on one of a series of soil conservation dams near Faulkton.	Dry, sandy clay.	Hard material. 15-19% grades on return.
300'-500'	20	120 self-loaded	William Cinader Clawson, Mich.	1 "D" leveling 25,000-yd. subgrade for 550-home Royal Oak subdivision.	Topsoil and clay.	Tight quarters . . . haul and spread among houses, foundations.
400'	27	189	E. C. Pfeiffer Edina, Minn.	2 "D's" grading roads, stripping topsoil, excavating basements, for Edina subdivision.	Sandy clay and loam topsoil.	Ideal conditions, slight grades, moist material.
400'	17	85 self-loaded	J. Ralph Fenton Longview, Texas	1 "D" completing 17,000-yd. Richardson & Ware highway job near Longview.	Heavy clay.	Clay surface slippery from heavy rains.
400'	32	160	Roy Kohler Clovis, Calif.	2 "D's" push-loading each other on 16,-500-yd. land-leveling near Clovis.	Common earth.	Negligible grades.
400'	12	Not measured self-loaded	P. W. Ryan Sons Janesville, Wis.	2 "D's" widening shoulders along 10 miles of U. S. 14 near Walworth.	Wet loam and gravel.	Haul through heavy traffic (6000 cars daily).
450'	26	156	Hollingsworth Const. Co. Dallas, Texas	1 "D" leveling building sites and grading streets for 78,000-yd. Walnut Hill Shopping Center near Dallas.	Sun-baked clay and loam.	Haul through traffic over city streets and across busy 4-lane highway.
450'	20	100	S. A. Cummings Compton, Calif.	2 "D's" on 30,000-yd. leveling job at Riviera subdivision, Pico.	Sandy loam.	Close maneuvering between trees, buildings.
450'	16	88 self-loaded	A. E. Williams Const. Co. Hartford, Conn.	1 "D" on 50,000-yd. Chester Bowles Park subdivision, Hartford.	Loam.	Frequent delays for workmen, trucks, instructions.
450'	12	60	L. B. McCowan Eggertsville, N. Y.	4 "D's" stripping and stockpiling 35,000 yds. for defense plant at Akron.	Heavy, wet, sticky clay	Continual rainfall, deep mud pockets.
500'	21	110 self-loaded	Gardner Brothers Excavating Co. Barberton, Ohio	2 "D's" building streets for subdivision in East Greenville.	Clay.	Haul up grades to 5%.
600'	17	85 self-loaded	George R. Stacy Tulelake, Calif.	2 "D's" on 1,100,000-yd. Lost River Canal Near Klamath Falls, Oregon.	Alkaline silt, hardpan.	Soft loading area.
600'	15	75	Roy Kohler Clovis, Calif.	2 "D's" push-loading each other on 16,-500-yd. land-leveling near Clovis.	Common earth.	Average for land-leveling, dry, negligible grades.
660'	17½	Not measured self-loaded	Sugden & Sivier, Inc. Hazel Park, Mich.	4 "D's" moving 450,000 yds. for new race track near Detroit.	Topsoil.	Precision spreading.
700'	17	Not measured self-loaded	Shely Construction Co. Lexington, Ky.	1 "D" on 40,000-yd. landing field for CAA at Georgetown.	Clay.	Average.
700'	15	75 self-loaded	Sorenson Bros. Murray, Utah	1 "D" land-leveling 15,000 yds. at Jeremy Ranch, Salt Lake City.	All Clay.	Rough haul roads.
800'	24	140 self-loaded	Leo Carroll, Contractor Kalkaska, Mich.	1 "D" converting 2 acres of swamp land into building lots at Kalkaska.	Sand and gravely sand.	300' of 20% grade.
950'	16½	90 self-loaded	Roy Kohl, Contractor Springfield, Ohio	1 "D" grading 45,000 yds. for new industrial plant in Yellow Springs.	Loam, clay, gravel in spots.	Haul grades up to 10%.
980'	18	Not measured self-loaded	Jose Augusto de Matos Sao Paulo, Brazil	2 "D's" grading 5 miles of streets for a new Sao Paulo subdivision.	Topsoil, clay and sand.	6% adverse grade on return.
980'	Not counted	54½ self-loaded	Burns Brick Co. Macon, Ga.	2 "D's" loading clay for brick manufacture at Macon.	Alluvial clay.	Selective loading. 5-15% adverse grades. Very slippery when wet.
1000'	15	91	Evans Contracting Co. Quitman, Miss.	3 "D's" excavating drainage channel on Route 71 near Clifton, La.	Muck and sand.	Material very wet, filled with roots.
1000'	17	85 self-loaded	Anglo-Thai Corp., Ltd. Bombay, India	2 "D's" relocating 18 miles, 532,700 yds. of the Bombay-Ahmedabad Coastal Highway between Tawa and Talasari.	Clay and rock.	Working through jungle undergrowth, dry, hard soil.
1000'	13	74	Southern Hills Pit, Inc. Dayton, Ohio	1 "D" pusher-loaded on 78,000-yd. leveling job for Forsythe Apartments, Dayton.	Clay and topsoil.	Sharp turns to load, dump between buildings, trees.
1000'	11⅓	83 self-loaded	Southern Hills Pit, Inc. Dayton, Ohio	1 "D" on same Forsythe housing job at Dayton.	Clay and topsoil.	Sharp turns to load, dump between buildings, trees.
1000'	12	86 self-loaded	Shely Construction Co. Lexington, Ky.	1 "D" building roads, walkways, for 20,000-yd. Ashland Park subdivision.	Red clay.	Haul over 4% grades.

# of these 113 "D" Tournapulls?

HAUL one way	TRIPS per hour (per unit)	PAY YDS. per hour (per unit)	Name of Owner	Job Description	Type of Material	Job Conditions
1000'	12	54 self-loaded	C. W. Frysinger Const. Co. Columbus, Ohio	4 "D's" on 6 miles, 58,000-yd. fine-grading and backsloping, Rt. 18 near Tiffin.	Topsoil, clay, sand and silt.	Self-loaded around poles, culverts. Haul through traffic.
1100'	17	114	Lawrence County Moulton, Ala.	1 "D" on 11 miles of new farm-to-market road near Moulton.	Typical Alabama red clay.	Average conditions.
1100'	13.3	70 self-loaded	Lawrence County Moulton, Ala.	1 "D" pusher-loaded on some Moulton road job.	Alabama red clay.	Average conditions.
1100'	10	52 self-loaded	White Construction Co. Kinston, N. C.	1 "D" moving sand to Asphalt plant at Greenville.	Loose sand.	Soft footings, abrasive material.
1200'	10	50 self-loaded	Rhoten & Frysinger Construction Co. Columbus, Ohio	1 "D" finishing on 10-mile subgrade for U. S. 30 in Crawford and Wyandot Counties.	Topsoil, clay and silt.	Load around poles, culverts. Share road with rock trucks.
1250'	14	84	Hutchinson & Wyatt Sandyville, W. Va.	2 "D's" extending taxiways at Kanawha County Airport, Charleston.	Rock-hard, sun-baked clay.	Extremely dry, tough materials.
1350'	13	71	Ham & Timmer Grandville, Mich.	2 "D's" on 100,000-yd. real estate grading job at Grand Rapids.	Pure Michigan blow sand.	Very loose footing . . . 200-230# rolling resistance.
1500'	14	70	L. M. Staker Const. Co. Ames, Iowa	3 "D's" filling for detour bridge approach on U. S. 30 at Ames.	Black gumbo.	4"-6" frost, haul across busy highway.
1600'	17½	105	Sugden & Sivier, Inc. Hazel Park, Mich.	4 "D's" grading, building 450,000-yd. race track near Detroit.	Fill 9" sand, 8" clay, 3½" topsoil and clay.	Precision spreading, banking track. Haul in traffic.
1640'	8	46 self-loaded	Roberto G. Mendoza Havana, Cuba	3 "D's" building new 595,000-yd. market route to Minas, Province de Camaguey.	Limestone, peat, and red clay.	Inexperienced operators. Hard, unrooted material. Rainy weather.
1700'	12	84	Evans Contracting Co. Quitman, Miss.	3 "D's" rebuilding 165,000-yd. highway Mount Herman to Clifton, La.	Silty clay and chalk.	Short grade from pit . . . dump in small area.
1700'	10	50 self-loaded	Sam Glasgow, Contractor Glenside, Penn.	1 "D" leveling industrial plant site in Philadelphia.	Sandy clay.	Average conditions.
1850'	11	66	Finley P. Smith Const. Co. Fort Lauderdale, Fla.	3 "D's" building 136,000-yd. grade separation over U. S. 1, north of Ft. Pierce.	"Ball bearing" ocean sand.	Haul across tracks, main highway.
2000'	10	50 self-loaded	Saprar-Lalitpur Division, Uttar Pradesh Govt., Jhansi, India	2 "D's" on earth fill for 1,722,000-yd. Saprar Dam at Mau Ranipur.	Clay and rock.	Very dry, dusty. Rough, hilly haul.
2100'	11	55 self-loaded	Acme Brick Co. Fort Worth, Texas	1 "D" hauling shale for asphalt manufacture at Bridgeport.	Slacked shale.	Normal.
2200'	10	50 self-loaded	Barnhill & Long Torboro, N. C.	4 "D's" moving 250,000 cu. yds. to raise roadbed above water level near Kinston.	Wet sand, clay.	Self-load under water 75% of time . . . narrow road.
2200'	12	60	H. W. & E. L. Von Dorsten Woodland, Calif.	2 "D's" on 50,500-yd. land-leveling job at Winters.	Clay, sandy loam.	Very dry soil.
2200'	10½	42 self-loaded	Macbeth & Company, Inc. Montebello, Calif.	1 "D" leveling for buildings, streets, walks on housing projects at Paramount.	Hard, dry, silty loam.	Haul across curbs, concrete pavement.
2400'	8	40	Roy Kohler Clovis, Calif.	2 "D's" repairing levee near Clovis.	Gumbo.	Wet material.
2580'	12	72	Young Bros. Waco, Texas	2 "D's" on 30,000-yd. drainage channel and leveling for Kilgore Hospital.	Tight-laying topsoil and sandy sod.	1700' uphill across field, 880' heavy traffic.
2640'	10	60	W. B. Bennett Paving, Ltd. Oshawa, Ontario	2 "D's" handling 9,000-yd. subgrade for city streets in Oshawa.	Sandy clay mixed with small stones and old road-surfacing.	Load around manholes. Haul ½ mi. through traffic.
3000'	7½	41	Kelly Contracting Company Louisville, Ky.	1 "D" on 9 mile, 80,000-yd. relocation U.S. 62, Kuttawa to Kentucky Lake Dam.	Gravel.	Normal.
3200'	7	42	Chippewa County Chippewa Falls, Wis.	3 "D's" on 100,000-yd. relocation of Highway M.	Glacial sand.	Abrasive materials. Level haul.
3900'	3½	18	Societe Francaise d'Entreprises de Dragages et de Travaux Publics, Dakar.	3 "D's" building 70-mile all-weather road between Kaolack and M'Bour, French West Africa.	Sand.	Loose footing with 125# rolling resistance . . . dry, dusty material.
3960'	5	30 self-loaded	Dave Kernosky The Heights, Mich.	2 "D's" grading 8000 yds. for 500-car Drive-In Theater at The Heights.	Gravel and gravely loam.	Precision grading. Haul over winding road.
4000'	6½	35	Luety Bros. Beloit, Wis.	2 "D's" on 160,000-yd. relocation of U. S. 151, south of Mineral Point.	Mostly blasted rock and clay.	Rough, narrow, winding haul. Return grades to 10%.
4000'	5	35	Noel Brothers Greeneville, Tenn.	1 "D" filling foundation walls and columns of tobacco warehouse.	Extremely hard, dry clay.	Load, dump between warehouse walls, columns.
4400'	5	22.5 self-loaded	Dane County Madison, Wis.	3 "D's" improving city streets in Verona.	Sand, gravel.	Haul through traffic. Spread in soft mud holes.
5280'	6	36	Fort York Const. Co., Ltd. Toronto, Canada	3 "D's" on 5-mile, 300,000-yd. road through muskeg, Matheson to Swastika.	Sand, mixed with clay, rock.	Material loose, rough. Haul over soft muskeg.
5500'	9	49½	J. K. Hodgman Const. Co., Inc. Fairmont, Minn.	2 "D's" on 7-mi., 210,000-yd. relocation of State Highway 4 near Dunnell.	Dry, loamy clay.	Dry, dusty, but generally excellent haul roads.
10,000'	2¾	12	Taylor Bros. Co., Inc. Birmingham, Mich.	1 "D" hauling fill for street paving job in Birmingham.	Gravel top with gumbo beneath.	Entire haul in heavy city traffic at 25 m.p.h.

D Tournapull: 7 yds., heaped 122 h.p. . . . speeds to 28 m.p.h.

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"We just naturally chose Dodge!"

. . . says **K. F. HOFFMAN,** *owner, Tri-State Excavating Company, Dubuque, Iowa*

"We first tried a Dodge truck in 1946," says Mr. Hoffman, "and we were so pleased with it that when we needed a new truck in 1951 we just naturally chose Dodge!

"Dodge trucks give the kind of performance we want —there's plenty of power for our heavy jobs. They're economical trucks, too. Expenses for gas, oil and upkeep stay 'way down, year after year."

Certainly, Mr. Hoffman realizes additional profits each day through the low-cost power of Dodge "*Job-Rated*" trucks—and so can you! *Whatever* you're doing—hauling dirt, spreading asphalt, or any one of many rugged jobs—there's a Dodge truck engineered at the factory to fit the job, save you money, last longer. For example, a Dodge "*Job-Rated*" 2½-ton model has a powerful 114-h.p. engine—plus the extra maneuverability made possible by short turning diameter . . . the added dependability assured by moistureproof ignition . . . and many other outstanding advantages.

Why not *make sure* that you get the power and dependability you want on *your* job? The man to see is your helpful Dodge dealer. His "welcome mat" is always out for you, and he'll be happy to give you just the information you need about the right truck for your hauling job.

DODGE "Job-Rated" TRUCKS

from a 125-hp, 8.5-yd wagon to a 450-hp, Butane-powered 27-yd rig. In the medium class are trailers of 13- to 17-cu yd capacity, powered by tractors having 190- to 275-hp diesel engines.

The chart lists some of these modern machines, showing struck yardage capacity, horsepower, tire size, power-to-weight ratio and price cubic yard of capacity.

Yardage Capacity	*Rated HP*	*Tire Size*	*Lb of GVW per HP*	*Price per yd of Capacity*
13 yd	190	24.00 x 25	400	$1,945.00
15 yd	200	24.00 x 29	420	2,100.00
17 yd	225	24.00 x 29	445	1,900.00
25 yd	300	27.00 x 33	465	1,695.00

It will be noted that generally the larger bottom-dumps have a lower price per yard of capacity, although performance is reduced somewhat. They may be hauled by a two-wheel overhung-engine type of tractor, or by a four-wheel tractor. The four-wheel type has had the greater popularity.

The two-wheel type is suited to wet, rutted loading pits and fills where the unit can "wiggle itself out of a hole" by turning the tractor first one way, then another, by pivoting against the trailer hitch; and in soft, dry sandy areas where small front steering wheels may tend to sink in and "plough" on a turn.

Basically, a bottom-dump tractor-trailer should be limited to hauls having short grades not exceeding 5%. Under these conditions, the four-wheel tractor has greater usable rim pull and grade ability compared with an equivalent two-wheel unit. There is a weight transfer, due to the grade, from the steering axle to the drive axle which can make better use of the maximum rim pull developed before drive wheels begin to spin. On the two-wheel type, this weight transfer takes weight off the drive axle, reducing tractive efficiency.

If an average coefficient of friction of 0.6 is assumed between drive tire and the road surface, or 60% tractive efficiency, then a 17-yd bottom-dump which has 47% of its gross weight (40,470 lb) loaded on a drive axle, has a maximum usable rim pull of about 24,280 lb. But this unit has ample power and gearing to develop 29,800 lb rim-pull maximum.

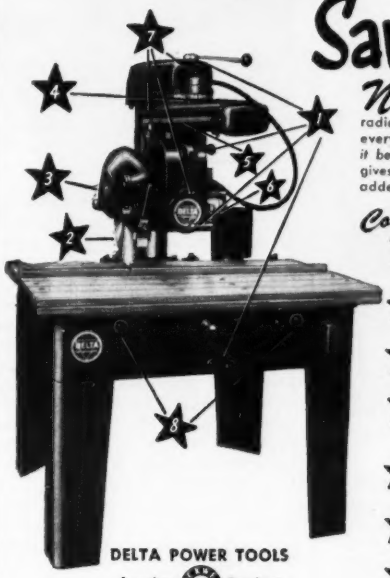
A 15-yd rear-dump, having 72.5% of its gross weight (62,700 lb) on the drive axle, has a maximum usable rim pull of 37,600 lb (0.6x62, 700). But the rear dump does not have sufficient horsepower and gearing to reach this very high figure. These figures illustrate why a rear dump having the same power-to-weight ratio as a bottom-dump will always have better grade ability when tractive conditions and efficiency are not 100%—which is the equivalent of a road surface of dry, rough concrete.

The rear dump has better traction on steep grades because it has a higher percentage of its total gross weight on the drive axle, and it has better traction in slippery muddy hauls, because the rim pull developed by the engine and through the gear train can be utilized to a greater extent before the drive wheels begin to spin.

The bottom-dump, however, with its large single flotation-type tires, has a major advantage over the dual-tired rear-dump whenever the bearing capacity of the

(Continued on next page)

Delta Again Scoops All Saw Makers



New Here at last is a heavy-duty radial saw especially designed to perform every operation you'll encounter—and to do *it better.* Only this new Delta "Radial" Saw gives you these exclusive features which mean added profits through production economies.

Compare These 8 Features

1. **Only Saw With All Controls In Front** . . . safer, easier to operate because every lock, lever, crank and calibrated scale is "up front".
2. **16" Saw Blade Cuts 5⅛" Deep** . . . unmatched capacity, more than any other 16" saw blade—blade not only cuts deeper but lasts longer.
3. **One-piece Aluminum Safety Guard** . . . covers the entire saw spindle for added safety (can be fitted to enclose blade completely).
4. **Front 360° Miter Pivot** . . . permits saw arm to rotate 360° **above** the work table; swings either way, right or left, to cut miters from 0 to 90° with normal "pull saw" action.
5. **Enclosed Life time Trackways** . . . glass-smooth, hardened surfaces minimize roller friction; carriage travels more easily, rolls much faster with less effort.
6. **Sensational New "Lo-Rise" Motor** . . . powerful direct drive, totally-enclosed, fan-cooled motor furnished in 3, 5, and 7½ HP.
7. **Quick-set Stops at 30°, 45°, 60° and 90°** . . . takes but a few seconds to set saw at these commonly used bevel and miter positions.
8. **Front Guide Fence Controls** . . . offer quick, positive locking action when changing guide fence positions; no more hammering of wedges.

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To assure top performance, Bay City specifies Thermoid Friction Materials for two important reasons: (1) Thermoid's close attention to individual needs, and (2) Thermoid's superior construction and highly developed friction compounds. These features add up to quality and performance that make Thermoid the choice of leading manufacturers.

For Brake Linings, Clutch Facings . . . all types of Friction Materials, it pays to specify Thermoid.

Thermoid

Thermoid Company
Trenton, N. J.

BUSY BOTTOM-DUMPS—Top: Euclid four-wheel tractor-type shown unloading on the fill has long been popular. Bottom: Two-wheel tractor units such as this Heiliner have their own peculiar advantages.

soil is low. Inflation pressure of the tire can be used as an indication of its flotation ability; the lower the air pressure per square inch, the better the flotation. While this is a general statement to which there are certain exceptions, it may be used as a guide, subject to further detailed analysis of equipment and loads and soils for any specific application. Dual-tired rear-dump trucks have tire inflation pressures from 60 to 75 psi; single-tired bottom-dump equipment uses tires inflated to 30 to 45 psi.

The bottom-dump can haul free-flowing earth, gravel, sandy clays, and similar material. However, large boulders, rock or shale may wedge in the door opening. The top of the body is 2 to 3 ft wider than door width, which is reduced by the inward sloping sides of the trailer. For such haulage, a rear-dump is suitable.

The bottom-dump can turn in limited areas; for example, a 13-yd trailer has a turning diameter of 52 ft 6 in., compared with 65 ft for a 15-ton dump truck. But jobs should be laid out so that the tractor-trailer can pull directly under the loading unit without backing.

Hopper loading can reduce loading time considerably and reduce the number of hauling units on a job. At Spickelmier Sand and Gravel Co., Indianapolis, Ind., one

NO TIME IS LOST when bottom-dump is loaded by pre-filled hopper supplied by this dragline for a sand and gravel company

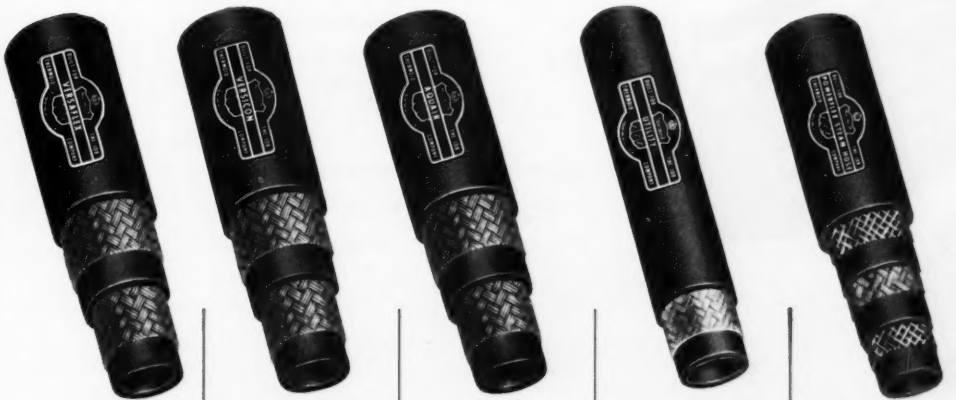
13-yd bottom-dump is loaded from a 35-ton portable field hopper in 1.5 min, as against an estimated 3-min loading time required for the 1¾-yd diesel-powered dragline.

The field hopper permits the dragline to work at peak efficiency, and one trailer keeps the plant sup-

(Continued on page 96)

now! 5 basic types of Thermoid hose does the work of eighteen!

The new Thermoid line of molded hose cuts handling time and storage costs 70% or more in a wide variety of industrial and commercial uses! Thermoid's "Basic Five": Versaflex . . . Versicon . . . Aquair . . . Utility . . . Powerflex . . . now combine simplification and versatility with Thermoid top quality construction. And Thermoid's new standard color identification eliminates confusion in storage and stock selection!



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Multi-purpose hose built to withstand higher pressures. Recommended for butane, propane, insecticides, etc. Color code: *Red.*

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A true all-purpose hose for virtually every type of air, gas or liquid. Color code: *Brown.*

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Rugged, dependable hose for handling air, water, welding gases. Color code: *Green*.*

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Most practical hose for air, water and illuminating gases at pressures from 75 to 125 psi. Color code: *Black.*

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Designed specifically for super heated steam at pressures from 100 to 200 psi. Color code: *Black.*

You can definitely simplify your buying, inventory, storage and stock selection with Thermoid's color-coded "Basic Five". Get full information from your distributor or write direct for Hose Catalog No. 3680. It's yours for the asking.

**Also furnished with Red Cover for acetylene*

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Rubber Sheet Packings • Molded Products
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Thermoid Company • Offices & Factories: Trenton, N. J., Nephi, Utah

Speed, speed and more speed is urgently needed in construction work these busy days. That's one good reason contractors large and small from coast to coast rely with confidence on Super-Vulcan. This powerful hammer delivers twice the number of smashing blows per minute — and on 25 to 35 per cent less steam than the single-acting type of hammer.

What's more, Super-Vulcan's durable construction eliminates costly breakdowns that slow progess. Its simple design—all working parts are instantly accessible—assures ease of operations, facilitates lubrication and routine maintenance. For extra economy, Super-Vulcan fits the same leads, uses the same accessories as Single-Acting Vulcan.

Sizes: 18C-30C-50C-80C meet all needs.

Get set with Super-Vulcan—the money-saving pile hammer that's super-fast on any type of job. Write for details today.

VULCAN IRON WORKS
331 North Bell Avenue
Chicago 12 [illegible] Illinois

ESTIMATED HOURLY OWNERSHIP AND OPERATING COSTS

Model 13-Yard Bottom-Dump

OWNERSHIP COSTS

1. DEPRECIATION*

Purchase Price	$ 24,690
Extras	$
Freight – (35,700 # @$1.50 /100#)	$ 536
Delivered Price	$ 25,226
Less Original value of tires (see No. 3 below)	$ 6,446
Total Amount to be Depreciated	$ 18,780
Divided by depreciation period –	10,000 Hours = $ 1.88

2. INTEREST, TAXES, INSURANCE and STORAGE.
(10% = Interest 6%, Taxes 2%, Ins. & Stor. 2%)
Estimated at 10% of average yearly investment.
Average yearly investment for 5 years is 60 % of delivered price.

Delivered Price ($25,226) × (60%) / Hours Operated per Year (2,000) × 10% = $ 0.77

A. TOTAL HOURLY OWNERSHIP COST $ 2.65

OPERATING COSTS

3. TIRE REPLACEMENT COST.**

Front Tire Size	14.00 x 24	-16 ply; 2 reqd –	$ 1,446
Drive Tire Size	40.00 x 25	-18 ply; 2 reqd –	$ 3,000
Trailer Tire Size	24.00 x 25	-18 ply; 2 reqd. –	$ 3,000
Total Value of Original Tires –			6,446
Divided by Estimated Tire Life of			5,000 Hours = $ 1.29

4. TIRE REPAIRS, estimated at 15% of Hourly Tire Cost	$ 0.19
5. REPAIRS, including parts and labor	$ 0.98
6. FUEL, est. consumption 42 gal./hr. @ 11¢/gal.	$ 0.43
7. OIL, GREASE – including greasing labor	$ 0.25
8. OPERATOR – including Social Security and Compensation	$ 2.00
B. TOTAL HOURLY OPERATING COSTS	$ 5.34
TOTAL ESTIMATED HOURLY OWNERSHIP AND OPERATING COST	$ 7.99

* No allowance made for salvage or resale value.
** Includes Tire, Tube, and Tax.

EUCLID ROAD MACHINERY COMPANY
Cleveland 17, Ohio

FIG. 6

plied to an output of 1,800 tons per day, plus a stockpile of unprocessed material near the washing plant. Proper sizing of haulers to loading unit is important to obtain low costs. In typical field applications, dragline and trailer sizes are matched as follows:

Trailer Size Struck Capacity	*Cu Yd Capacity Dragline Bucket*	*Number of Buckets to Fill Trailer Body*
13 yd	1¾ yd to 3 yd	7 to 4
17 yd	2½ yd to 4 yd	7 to 4
25 yd	3½ yd to 5 yd	7 to 5

If yardage to be moved and working areas permit the use of large capacity hauling units, extra savings can be made with big equipment. Bottom-dumps in common use have the following estimated hourly ownership and operating costs:

13 yd — $ 7.99 per hr
17 yd — $ 8.55 per hr
25 yd — $11.38 per hr

These estimates are comparable, and the same uniform factors for estimating repairs, tire life and depreciation have been applied.

On this basis, the 17-yd bottom-dump has an estimated cost per hour of 7.1% more than the 13-yd machine but it has an increase in struck capacity of 30.4%. The 25-yd hauler has cost per hour of 42.6% over the 13-yd machine, but it has an increase in struck measure capacity of 92.5%.

Hourly ownership and operating costs *(Fig. 6)* illustrate typical calculations for depreciation, interest, taxes, insurance, storage, tire replacement cost, repair, fuel, oil, grease and operator for a 13-yd

(Continued on page 99)

The telephone bell tolls loud and long for construction, quarry and stripping operators whose blasting creates excessive noise and vibration. Neighbors often threaten to ring the bell for good on future operations.

Generally, it is the "air blast" (air vibration) which irritates the neighbors. By longer confinement of the explosives force of a blast, the ROCKMASTER System practically eliminates this noise . . . uses the full power of the blast to break rock.

Some operators have found that they can greatly increase the size of their blasts and at the same time end the neighbors' complaints by switching to the ROCKMASTER System. To see how *you* can disturb more rock without disturbing your neighbors, send for your free copy of the 20-page ROCKMASTER book today.

ATLAS EXPLOSIVES

ATLAS

"Everything for Blasting"

ATLAS POWDER COMPANY • WILMINGTON 99, DELAWARE

Offices in principal cities

1 Here are eight holes ready to shoot. ROCKMASTER milli-second delay detonators are at the bottom of each hole to start action on the toe. This gives maximum confinement of explosives gases and thus minimizes air blast.

2 The only sound heard here was a dull rumble. The toe can be seen clearly moving out first. The confined power of the explosives plus the one-two punch of milli-second delays assures good fragmentation and *controlled* throw.

3 This is the height of the blast. There still are no escaping gases. The only large boulders are those few which were at top of the face and away from the twisting action of the milli-second delays. Remainder of rock is bite-size.

4 Here's the pile ready for the shovel. Bulk of rock is properly distributed. Face along line holes shows little or no backbreak. Another example showing that ROCKMASTER disturbs rock but not neighbors.

"SKIL Radial Saws beat all others for accuracy and work output!"

—says **Robert Dickson,**
carpenter foreman,
TERMINAL CONSTRUCTION CORPORATION,
Wood-Ridge, New Jersey

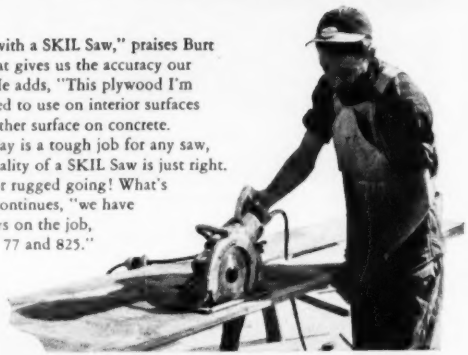
And Bob Dickson knows what he's talking about! This construction company is using four Model 450 SKIL Radials (in addition to 24 SKIL Portable Saws) on a mammoth project for the Newark Housing Authority.

This project consists of 12 apartment buildings and one community building, for 630 family units. SKIL Radials are used to pre-cut all columns, beams, shoring, ribs, wedges, etc. It's a real test of performance, *proving* SKIL durability, accuracy and work-volume.

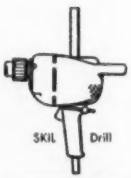
SKIL RADIAL SAW
MODEL 450

Incorporates new design features to make a complete construction workshop that sets up for all cuts. Easily operated with speed and precision by one man. SKIL Radial Saws are available in all standard voltages with manual or magnetic control; 2, 3 and 5 h.p., 14" or 16" blades.

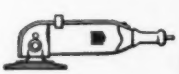
"You can *see* the cut with a SKIL Saw," praises Burt Del Vecchio, "and that gives us the accuracy our standards require." He adds, "This plywood I'm sawing is plastic coated to use on interior surfaces so we can get a smoother surface on concrete. Sawing plywood all day is a tough job for any saw, but the power and quality of a SKIL Saw is just right. They're really built for rugged going! What's more," Del Vecchio continues, "we have 24 SKIL Portable Saws on the job, including Models 67, 77 and 825."



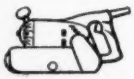
SKIL
PORTABLE TOOLS



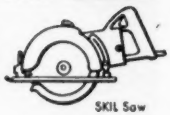
SKIL Drill



SKIL Disc Sander



SKIL Belt Sander



SKIL Saw

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SIDE-DUMP UNITS such as these six-wheel Macks with Easton bodies can be highly efficient under controlled conditions. Trucks carry no hoists; loads here are dumped by gantry.

bottom-dump hauler. As shown in this estimate, the operating cost for tires is one of the highest of all direct costs. Drivers can play an important part in prolonging tire life and lowering operating cost.

Side-dump tractor-trailers are used widely in stripping operations for spoiling waste material over a bank, and a number of quarries use side-dump wagons for rock haulage. In this operation, the side-dump pulls up alongside the primary crusher or feeder, and the rock can be fed slowly into the crusher to avoid clogging. Somewhat faster time cycles may be obtained by elimination of backing and dumping into a crusher as required with an end-dump. Generally this saving in dumping time is not sufficient to make the difference in one hauling unit in the cycle. There are usually other considerations which dictate that if four 15-ton machines are required to supply a crushing plant with rock, depending upon the shovel size, length of haul, and other considerations previously outlined, it does not matter particularly whether the units are rear-dump or side-dump; it still will take four hauling units. However, where restricted space around the hopper is a consideration, the side-dump is excellent.

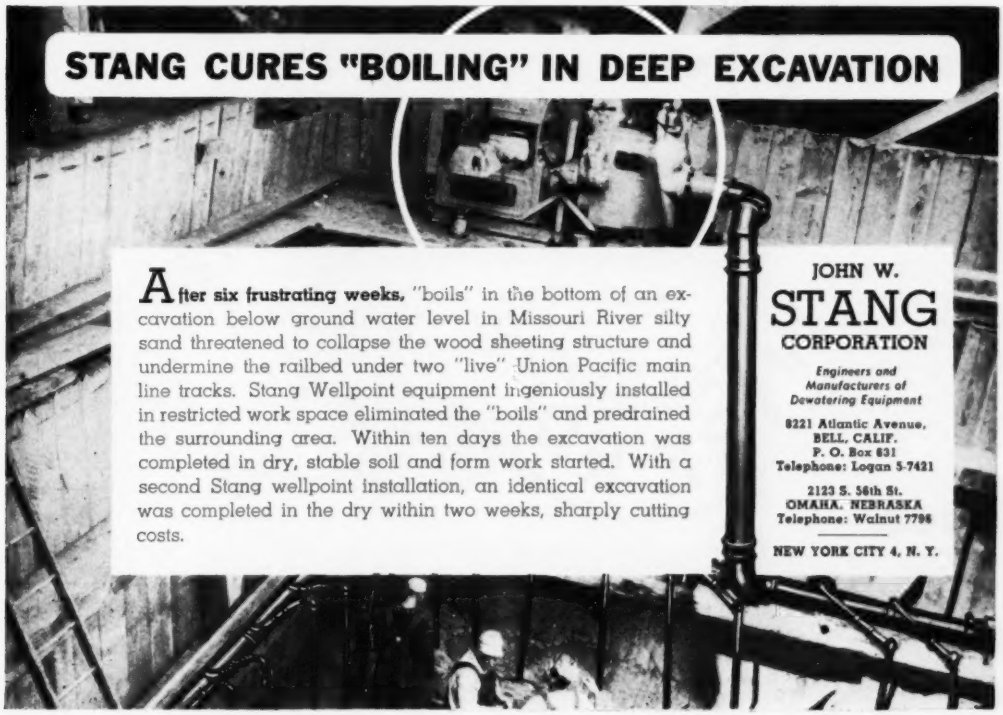
Contractors in recent years have shown considerable interest in a bottom-dump wagon and a scraper that can be hauled interchangeably by the same rubber-tired tractor.

Usually the bottom-dump is 1½ to 2 yd larger in capacity than a comparable scraper bowl pulled by the same power unit and thus, on the long hauls, the extra yardage per trip more than justifies the added initial investment or expense of maintaining both the scraper and the bottom-dump hopper for one tractor unit.

A rear-dump rock wagon also is being used interchangeably with scrapers and bottom-dumps. This machine possesses good maneuverability and can handle rock, heavy shale, and such materials in similar fashion to the rear-dump truck, although the tractor-trailer unit does not have equivalent tractive efficiency or grade ability.

* * *

Ed. Note: The nineteenth article in this series will appear in the July issue.


STANG CURES "BOILING" IN DEEP EXCAVATION
After six frustrating weeks, "boils" in the bottom of an excavation below ground water level in Missouri River silty sand threatened to collapse the wood sheeting structure and undermine the railbed under two "live" Union Pacific main line tracks. Stang Wellpoint equipment ingeniously installed in restricted work space eliminated the "boils" and predrained the surrounding area. Within ten days the excavation was completed in dry, stable soil and form work started. With a second Stang wellpoint installation, an identical excavation was completed in the dry within two weeks, sharply cutting costs.
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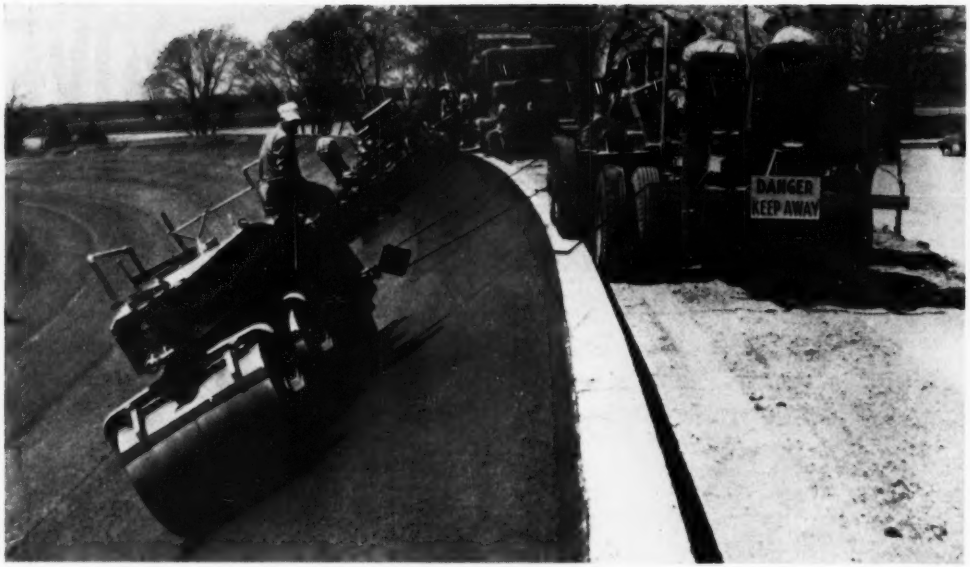


Out on the General Motors Proving Ground Speed Loop . . .

Finisher and Roller Hang High

BARBER-GREENE finisher, modified to dished contour and for working on steep slopes, places asphalt paving on superelevated curve at General Motors Proving Ground speed loop. Paver is supported by tractor on top of bank. Other two curves are steeper than this one.

To Repave Steep Banked Slopes

By HAROLD W. RICHARDSON, Editor

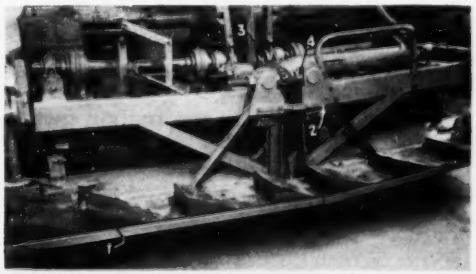
SMART FELLOWS, those General Motors Proving Grounds officials and engineers! They were really faced with a toughie—how to repave the 3.8-mi speed loop of the famous General Motors Proving Ground at Milford, Mich., with its three steeply banked turns that tilt up to 37-deg (77%) slopes. You see, all they had to do was to figure out just how to hang a bituminous finishing machine on those steep slopes, then how to roll the asphalt mat, all to the tune of turning out a high-quality pavement equal to Michigan Highway Department standard specifications.

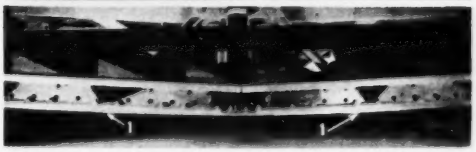
The General Motors people worked out basic construction procedures—fantastic, they were, too—and proved them with a small-scale model built in the shops. Then they called upon Barber-Greene and Buffalo-Springfield Roller Co., to each modify their standard bituminous finisher and 10- to 15-ton three-axle tandem roller, respectively, into mountain-climbing dished-contour units, and brought in a cooperative contractor, Detroit Asphalt Paving Co., to do the job.

Straight stretches and the relatively flat lower inside lanes of the three curves were repaved with conventional equipment. On the steep upper slopes of the banked curves the paving procedure was briefly this: a road was graded at top of bank of each curve, and a 1x3-ft concrete curb, buried 2 ft deep, was built along the top rim. The banked slopes were paved in 10-ft strips with a modified Barber-Greene paver supported by a winch line from an Allis-Chalmers

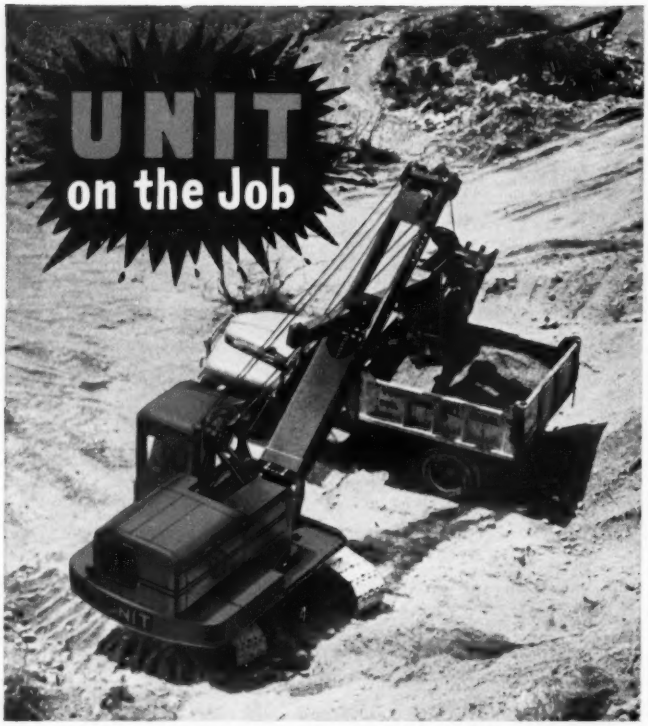
FINISHER is supported on steep slope by two-point suspension of multiple line from winch of Allis-Chalmers HD15 tractor. At front of tractor is hot-mix receiving hopper and belt conveyor for transferring mix to paver. Equipment here is being tried out on 200-ft mock-up section built for testing paving and rolling units.

PAVING OUTFIT gets running test on mock-up section. Hot mix, dumped into hopper at front of tractor, is transferred by belt and chute to altered receiving box on finisher. Support lines from tractor holding finisher on slope are out of sight behind paver engine.





PAVER is standard Barber-Greene 10-ft finishing machine modified to dished contour and for steep slope operations. Above—hopper altered to receive hot mix from belt or chute and to feed spreader screw on slope. Top right—(1) special steps for workmen; (2) negative crown indicator; (3) modified universal joint; (4) modified crown adjuster. Right—shims (1) warp base of screed plate to 60-ft dished radius.



SWING SPEED makes PAY LOADS!

Here's a UNIT ½ Yard Shovel doing a PRODUCTION DIGGING JOB in a gravel pit. UNIT owners like the ease of operation and the FULL VISION CAB for complete visibility. They also like the sturdy construction and the many mechanical features, plus the ECONOMICAL PERFORMANCE and LOW UP-KEEP which all add up to EARNING POWER. Why not investigate what UNIT can do for you — on YOUR next excavating and material handling job?

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CRAWLER OR MOBILE MODELS . . . GASOLINE OR DIESEL

All Models Convertible to ALL Attachments!

HD15 tractor traveling the top road. An asphalt receiving hopper was mounted on the front of the tractor, discharging through a belt conveyor and chutes into the finisher hopper. Rolling followed immediately with a modified diesel-drive Buffalo-Springfield roller supported by a winch mounted on a big GMC truck operating on the top road. Both tractor and truck carried special horizontal wheels bearing against the top curb. It was a beautiful procedure.

But the speed loop is the heart of the Proving Grounds. Taking it out of service was equivalent to killing a track on a main line railroad. Time was of the essence, and nothing must go wrong to delay operations and completion of the project one moment. So just to make sure, General Motors went to the expense and trouble to build a mock-up section of the worst conditions —200 ft long—where the equipment could be tried out, the bugs eliminated, and the crews trained.

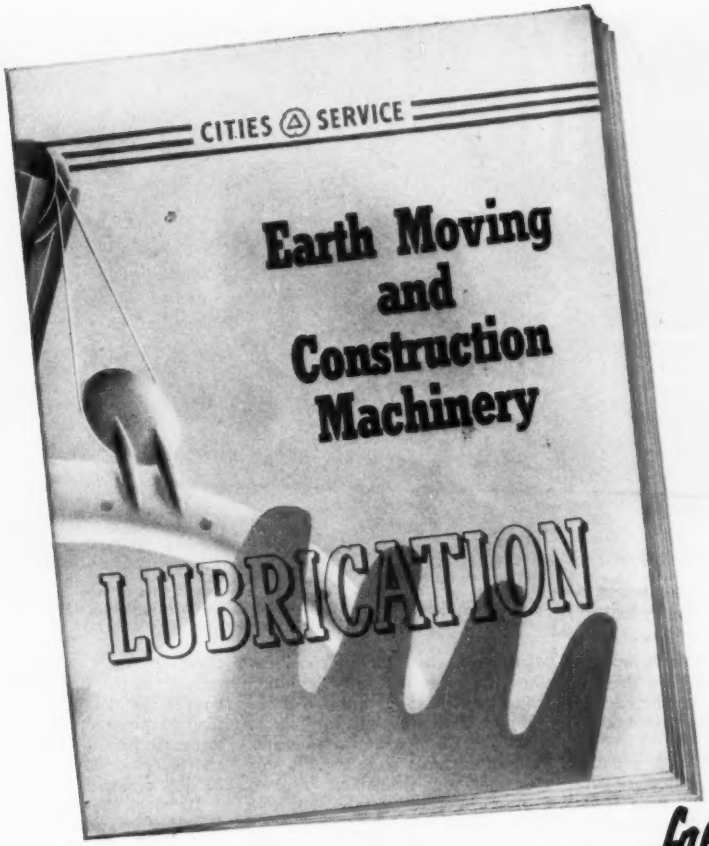
Job Beats Strikes and Rains

We visited the project on May 14, just in time to see the final wind-up. Curb construction started April 1; first asphalt was laid April 16; working 6 days a week, they finished up on May 14. Everyone on the job was grinning like a Cheshire cat emerging from a mouse factory. They had just beaten a general strike that was paralyzing construction operations in the whole Detroit metropolitan area; and ominous clouds were gathering in the West. During the construction period they had lost only 4 hr because of rain; yet the night the job was finished a gulley-washing storm hit the area, which would have tied the job up for days. They had a right to grin, those hard-working crews did.

The original 3.8-mi speed loop was built in 1926 as an egg-shaped oval with three banked turns. It was paved with concrete, and the steep slope sections were literally placed by hand.

Testing cars is a 12-month-per-year job for General Motors, so they use salt for ice control on the speed loop. This salt is rough on the concrete paving. But turning the track over to Army Ordnance during the War for tank testing really put the speed loop on the bum. By the end of 1945 when it was turned back for civilian automotive use, the track was a wreck. General Motors patched

(Continued on page 106)



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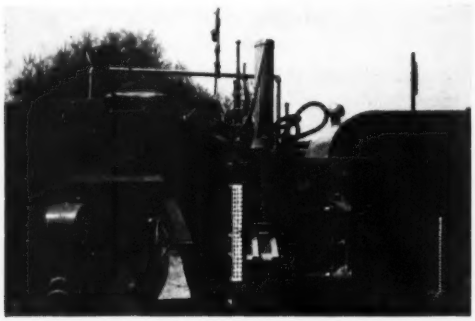
BUFFALO-SPRINGFIELD 3-axle tandem roller rides high on the slope, supported by double winch line from specially equipped truck. Tension on load line is held uniform by constant speed of torque converter drive on Carco winch on truck.

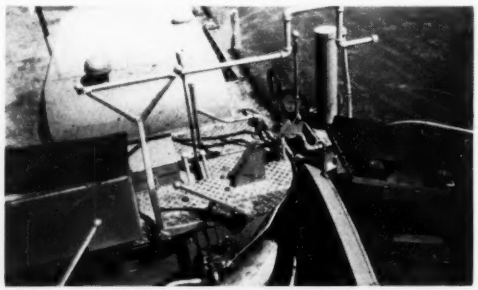
it up the best they could by applying an asphalt overlay on the flat stretches and as far up the curved banks as standard equipment could handle.

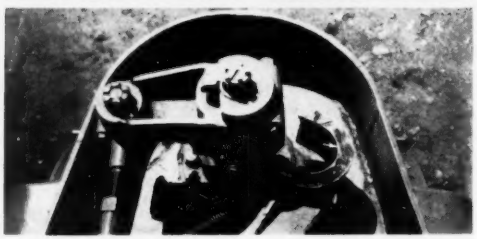
But at best, it was still a patch job, and the upper banks were getting worse. So early this year, General Motors decided to repave the entire speed loop with 1¼ in. of asphaltic concrete, using standard Michigan State Highway specifications as a guide. The only deviation from standard specs was use of 85-100 penetration asphalt in place of the State's 50-60 penetration grade. Asphalt surfaces were given a single coat of emulsified asphalt prime; concrete surfaces got two prime coats.

The superelevated curves are each laid out, transversely, in a three-section parabolic dished curve. On the two highest banked curves, the pavement is almost vertical at point of contact with the top curb. Here a 10-ft chord across the top lane slopes a maximum of 37 deg, or about 77%.

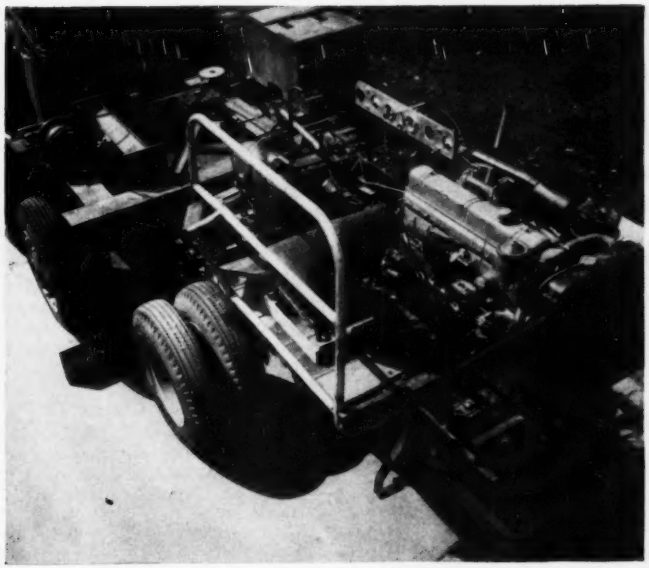
To meet the parabolic contour, the finisher and roller were modified to a 60-ft dished radius curve, transversely. For the Barber-







PRIMARY CHANGES on Buffalo-Springfield road roller were grinding rolls barrel shape to 60-ft radius, replacement of gas engine with GM diesel that works well in any position, and pressurizing water spray system over rollers. Other modifications as shown here include: Above—heavy hitch for support cable is adjustable in two directions to put pull at exact center of gravity. Scale shows height of hitch above pavement. Top right—seat is moved out to uphill side and is adjustable to compensate for slope; controls are extended to within reach of operator in his changed position. Right—special shim (arrow) for adjusting front guide roller for easier manipulation over warped surfaces.

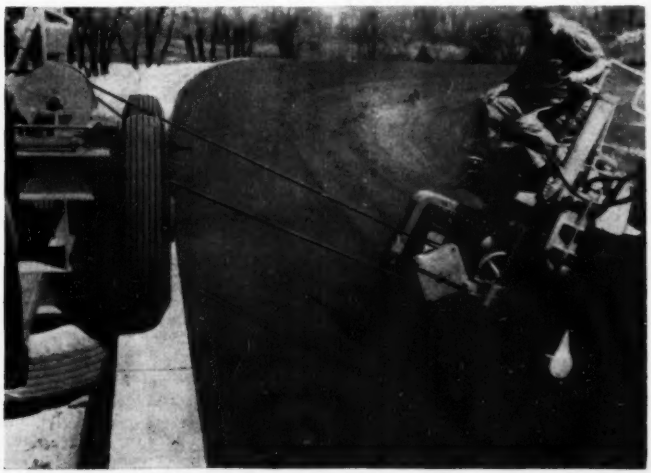


GMC TRUCK that supports road roller carries Buick engine driving Carco winch through Dynaflow torque converter. Counterweight opposite bogie carrier balances guide wheels.

Greene rig, this meant putting a negative crown into the machine, grinding the tamper bars, and warping the screed by shimming. Other changes included: deepening the engine oil sump and putting the oil pump at bottom of this sump; tilting the engine carburetor by 16 deg; tilting the seat; speeding up the upper-half section of the screw spreader to better handle the asphalt up hill; and adding sloped steps at each end of the machine for the workmen to ride.

Spring-loaded lateral cables were installed in the finisher to help take the side thrust and to relieve excessive strain on the screed pivots. The receiving hopper was altered and the gates changed to feed the mix on steep slopes.

This machine was held in place



BOGIE CARRIER on roller-supporting truck mounts horizontal and vertical wheels bearing against curb as guide. Bogie also carries cable guide drum.

COMMENT
from the
BUTLER ENGINEER
Of Building Booms and Brassieres with Bullets

Well, I'm back to a diet of gruel, brewer's yeast and gallons of milk after the carousel at the Ready Mixed Convention in Chicago and the Concrete Products jamboree in New York. Too much terrapin and lobster, I guess. Couldn't be anything else.

Seriously, the best parts of both meetings were the opportunities to renew old friendships and make a lot of new ones. I do want to thank everyone — past, present and future owners of Butler Plants—who stopped for a visit at the Butler exhibits. It's heartwarming to know there are so many friends of the products we make and of the organization that makes them.

Have any of you been up to Canada recently? They're in the most spectacular, triple-barrelled, hell-a-whippin' construction program I've ever seen. And the money to pay for it, too.

I look at the controls, artificial shortages, arguments, red tape and indecision on our side of the border and I feel we're "fiddling while Rome burns." *Canada, gentlemen, has thrown the fiddle away and picked up the trowel.*

And if they say they're going to build the St. L. Seaway *alone* if necessary — it ain't exhaust from an idling engine. They can do it and will — and we'll pay at their toll gate.

Sat in the audience at a T-V studio in New York. Western stuff. Girl a couple of seats over said, "What do you call that thing the cowboy's wearing — you know, that brassiere with bullets?" *Shades of Buffalo Bill! What a name for a shoulder holster!*

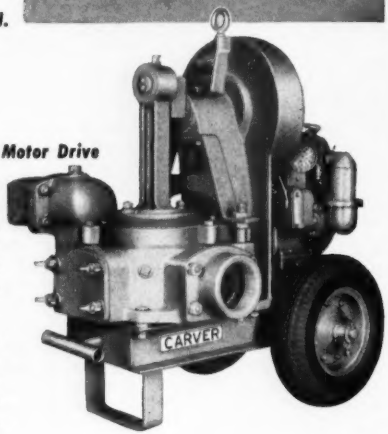
Yours for better roads
and more of 'em,

The Butler Engineer

BUTLER BIN COMPANY
WAUKESHA, WISCONSIN

For the Pump to handle the Roughest, Toughest Jobs with ease depend on **CARVER DIAPHRAGM PUMPS**

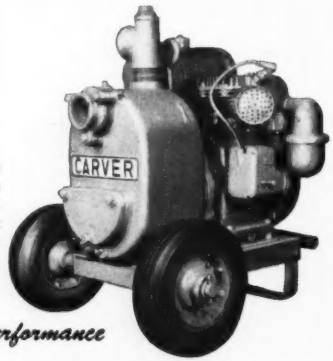
★ *4" Suction and Discharge*
★ *Capacities up to 6,000 G.P.H.*
★ *Timken Roller Bearings*
★ *Non-Clogging Valves*
★ *Long-Life Diaphragm*
★ *Enclosed Transmission*
★ *Gasoline Engine or Electric Motor Drive*



Designed from suction to discharge for rugged dependable pumping they're loaded with reserve power and stamina to handle sludge, mud, seepage, grit, sewage and septic tanks with the greatest of ease.

Nothing fragile about these pumps, no underpowering, no compromise on quality. Throughout their many years Carver Pumps have earned an enviable reputation on the toughest construction jobs.

Specify **CARVER** *for the* **Complete QUALITY LINE**



CARVER manufactures a complete line of the highest quality self-priming pumps in all sizes from 4,000 to 240,000 G.P.H. gasoline engine, diesel, motor or belt drive. See your CARVER Distributor or write for Bulletin No. 110.

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CARVER PUMPS

on the slope by a multiple-part line from the A-C HD15 tractor on top, the line being reeved through a two-point suspension on the finisher. The hopper into which the hot-mix trucks dumped their batches was fastened to the front of the tractor, though it rode on its own wheels and also carried horizontal thrust wheels bearing against the curb. At bottom of this hopper was a belt conveyor, driven by a separate gas engine, that extended well out over the curb. On the high lanes the belt discharged directly into the finisher box; a chute extension was necessary to reach the lower lanes.

Rolls Ground to Contour

The Buffalo-Springfield roller was a 3-axle tandem model, rated at 10 tons metal weight, 15 tons ballasted. The rolls were ground barrel shape to a 60-ft radius. A General Motors 2-cycle diesel engine, which would work efficiently in any position, replaced the conventional gas engine. The seat was made adjustable, and controls were extended for easy reach of the operator from his tilted seat position. A special adjustment to the end guide roll eased operations over warped surfaces, and the water system to the rolls was fully pressurized.

The neatest trick in connection with the roller was the way it was suspended from on top of the bank. To one side of the roller was attached a heavy U-bolt, adjustable up and down and fore and aft. This adjustment enabled the line pull holding the roller on the slope to be placed at exact center of gravity of the machine on any pitch.

The roller was suspended through a two-part line from a specially equipped GMC flatbed truck operating on the top roadway. This truck carried a separate Buick engine driving a Carco winch through a torque converter. A heavy cross-frame extended out from the left center of the truck, as a bogie carrier for four rubber-tired wheels, two vertical and two horizontal, that rode against the top and inside of the curb, respectively. This frame carried a guide drum supporting the roller cable.

A speed indicator was attached to the torque converter. By keeping the converter speed constant, the winch operator could maintain a uniform tension in the load line. So long as the load was kept

(Continued on page 110)

"Here's how my SKULLGARD turned this ACCIDENT into an INCIDENT!

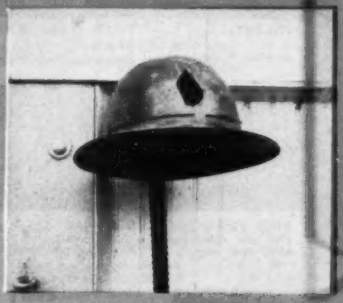
says Bennie Mellesmoen, senior journeyman, Minnesota Power & Light Company.

"What started as a routine job ended up anything but . . . and made me mighty glad Skullgard protection is a habit with me.

"I was working on a scaffold beneath a concrete pier at the Blanchard Dam when a reinforcing rod took a dive from above.

"A yell from the boys warned me, but it was too late. The rod crashed into my Skullgard, punctured it, and nicked my scalp.

"A short visit with the doctor fixed me up, and I went back on the job without lost time. I'm keeping the rod for a souvenir.



"I shudder to think what my head would have looked like if it hadn't been for my Skullgard taking the rap."

This incident underscores again that full-time head protection, even on routine jobs, is good safety sense. It illustrates, too, the hazard-defying characteristics of the M.S.A. Skullgard. High-strength, one-piece laminated bakelite dissipates the force of heavy or sudden impact to safeguard the head, neck and spine of the wearer from the full force of the blow. Engineered head bands cushion the blow, and permit non-slipping adjustment that means an accurate fit. And M.S.A. Skullgards have the comfort-qualities that encourage full-time hat use. Write for complete details.

Call the M.S.A. man on your every safety problem . . . his job is to help you.

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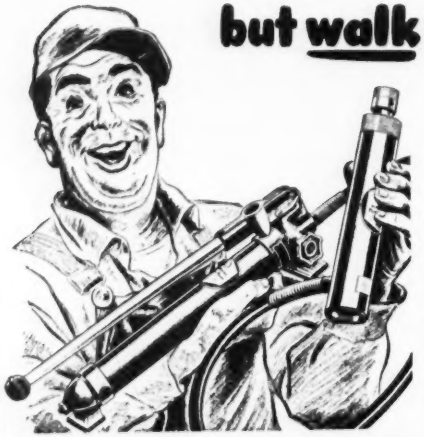
MSA

SAFETY EQUIPMENT HEADQUARTERS

Man-Alive! this Hydraulic Jack DOES EVERYTHING but walk and talk!



It's a "Porto-Power" . . . not an *ordinary* jack! And "Porto-Power" wipes out scores of traditional construction and maintenance methods which, by comparison, are downright money-wasting! Every-day savings are dramatic — so you'll want to get the *full facts* and order "Porto-Power" *immediately!* See leading supply houses or write Blackhawk today.

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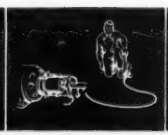
PUSH OVER ANY SPAN — Eliminate dangerous blocking up.



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STRAIGHTEN parts. Apply force exactly where you want it!

BEND PIPE and conduit the easy, profitable, fast way.

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FREE blueprints show how to build low-cost press for Porto-Power.

CLAMP parts for welding or bolting—short or long spans.

Every contractor needs this S-79 KIT

This is the basic "Porto-Power" assortment for *every* contractor. Its 20-ton remotely-controlled hydraulic jack and 12 attachments pay for themselves on one or a few routine assignments. (You can get "Porto-Power" in 2, 4, 7, 10 and 50-ton sizes, too.)

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(trade-mark registered) remotely-controlled hydraulic jacks are made only by

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Send literature on "How *Porto-Power* speeds up construction and maintenance."

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STEEP BANK PAVING . . . Cont. from p. 108

uniform, and the line was attached to roller center of gravity, the roller would travel in a straight horizontal line with equal pressure across width of rolls. It was a clever idea, indeed.

Considerable manipulation of both paver and roller was necessary to warp the parabolic banked sections into flat lane approaches at ends of the curves, but the result was a smooth transition. We rode one curve at 85 mph in an Olds 88, and couldn't find a ripple or a bump in the pavement.

About 10,000 tons of hot-mix asphalt was furnished by one of Detroit Asphalt Paving Co's plants 10 mi from the job.

Everybody Cooperated

For General Motors, H. H. Barnes is director of the Proving Ground Section, and T. E. Dougherty is assistant director. Paving operations were directed by George Hodgins, head of construction. Basic mechanical details were worked out by Louis C. Lundstrom, head of mechanical engineering, and his staff, in cooperation with Barber-Greene Co. and Buffalo-Springfield Roller Co.

Equipment modification details were developed for Barber-Greene by O. L. Place, development engineer, and A. F. Manegold, Detroit representative, who designed the tractor-hopper and belt-conveyor system. For Buffalo-Springfield, John F. Harrison, vice-president and general manager, Murray D. Shaffer, director of sales, and William Mathys, chief engineer, worked out the roller details.

Wilbur Peterson, vice-president of Detroit Asphalt Paving Co., kept a close eye on the job, and Joe Skarzycki was superintendent.

Want Safety Reprints?

LAST WINTER CONSTRUCTION METHODS AND EQUIPMENT published a three-part article entitled "What Can I Do About Safety?". It outlines ten workable suggestions that have paid off handsomely for one contractor who operates a consistent safety program. Reprint copies are available for 15c each, ten or more at 10c each. The information given is useful to any contractor, large or small, especially supervisory personnel. Write to Reprint Department, CONSTRUCTION METHODS AND EQUIPMENT, 330 W. 42nd St., New York 36, N. Y.

THE *Maintenance Shop*...

A MONTHLY EQUIPMENT SERVICE AND REPAIR FEATURE

Important Factors in Engine Overhaul

By HOMER C. CAMPBELL, Service Manager,
H. W. Moore Equipment Co., Denver, Colo.

THE DUTIES of engine bearings are diversified. They must carry the extreme pressure loads of combustion imposed on the piston, they must withstand high speeds, operate under varying temperatures, hold up under shock loads and, at the same time, maintain clearance with the rotating shaft sufficient to permit the lubricant to flow.

The right bearing for the work to be done, properly fitted, will do all these things and many more. Such things as lubrication requirements, oil filter design, loads imposed on the bearings, speeds, heat factors and shaft materials we will leave to the slipstick boys—the design engineers, test engineers and their associates. Our interest is basically in the replacement job.

It is our job to rebuild this equipment after the original assembly has given the owner a reasonable amount of production. Our job is to get the equipment back as close to its original condition as possible and assist the owner in getting as much, if not more, production from the equipment after being rebuilt. This is a big order.

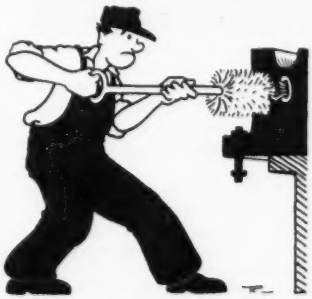
The tear down of the engine will tell a good mechanic many things that he will want to know. Cleaning of parts before reassembly is of utmost importance. All oil passages in the block must be thoroughly cleaned, steamed and flushed. A rifle brush is a big help in really cleaning such passages.

Oil passages in connecting rods and crankshaft must be positively cleaned. Header plugs into all passages in the block for oil should be removed so that these passages can be cleaned and inspected. Installation of precision-type bearings requires, above all, cleanliness, if the job is to be successful.

In the tear-down operation the mechanic will discover what's ahead. The face of the bearing will tell him many things that will be a guiding light in the reassembly. The back of the bearing will give him equally as much information. Bearing backs uniformly clean show evidence of a good fit to the rod or block bores; dark-colored areas denote that the bearing back has not been properly seated.

A bearing that has seized the shaft and turned in the con rod or engine block presents a problem. In the matter of the rod the remedy is simple: Install a new rod. If the bearing has turned in the block, the problem is serious. This writer would like an answer that is practical and that will assure continued good service from the engine. We have had experience with metalizing, boring out the saddle and installing a false seat. Yet neither method has proved satisfactory. The installation of a new block is costly, but is to our knowledge the only completely satisfactory answer. We should appreciate hearing from readers with other solutions.

The tear down will inform the mechanic of the condition of bearing cap studs and connecting rod bolts. He will note the condition of the crankcase. The amount of sludge, foreign material, dirt and metal chips will point the way to



troubles to be investigated. Bearings will tell, to a certain extent, the condition of the con rods. Are they straight or cocked? Piston wear also will add to this information. In any event, con rods and

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"One Armed Bandit"
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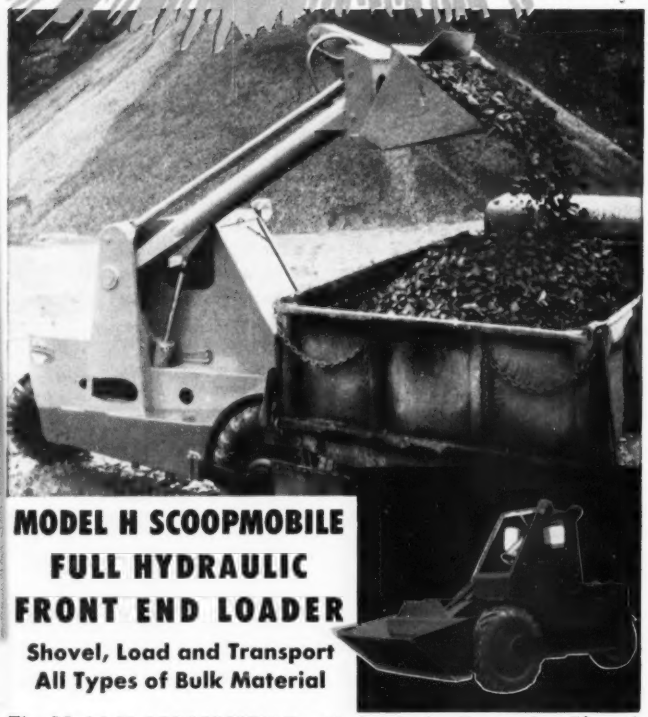

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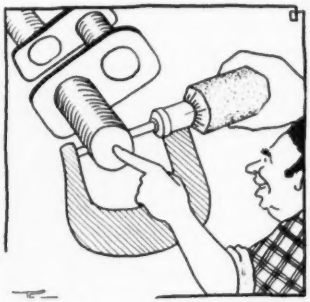
MAINTENANCE SHOP . . .Continued

pistons should be checked for proper alignment before assembly is made. These items take much punishment over a long period of hard field service in any engine. They have earned and are entitled to proper care and installation.

After the parts have been cleaned, they are inspected for various service operations necessary: Rods and pistons aligned; crankshaft checked for size, out



of round, and other possible defects; bearing bores in con rods checked for size, out of round and other distortions that would not lend themselves to a good fit. Bearing bores in the block should be checked for size and condition. If a bearing has been rocking in its bore, the inspection must be thorough.

Bores should be checked with micrometers for proper dimensions. If the engine has had poor preventive maintenance, the shaft journals may be badly scratched or grooved from dirt and foreign material circulating through the lubrication system and the bearings. If these are too bad, the shaft may have to be reground or replaced. In regrinding of crankshafts, great care must be exercised. The shaft must be finished to proper undersize and with a good smooth working surface. And wherever possible, proper undersize bearings are to be used in the replacement, as recommended by the manufacturer. When bearings are purchased on the open market, the proper type for the engine involved may not be supplied and the anticipated life of the rebuild may be shortened. Specifically, the recommendations of the manufacturer for the proper assembly should be followed at all times.

After the engine has been properly dismantled, cleaned and inspected the reassembly is some-

(Continued on page 115)

NOW all the HOT PATCH material you want..any type..any quantity where and when you want it

for ALL maintenance and small paving jobs

the NEED

In the face of ever heavier traffic loads, rising costs and lack of funds greatly limit new construction and place an ever greater burden on maintenance programs in city, town, county and state. For this work even the best patch is none too good. Yet until the advent of the new Mixall, an efficient and economical means of producing all types of hot high quality patch material has not been available.

is ANSWERED

A small, highly portable unit, capable of on-the-spot production of even the highest types of hot mixes comparable to those produced in Barber-Greene's largest continuous hot mix plant—*that* is the Mixall. Its range of usefulness extends throughout the field of road maintenance into small paving and resurfacing jobs.

In the Mixall, Barber-Greene offers a unique and effective combination of an efficient rotary drum aggregate dryer with a proved B-G twin shaft heated pugmill mixer. It is rightly called the Mixall because of *all* the things it can do . . .

- . . . **Mix all quantities:** from a single 300 lb. batch up to 5 tons per hour of hot mix—or up to 10 tons per hour of cold patch.
- . . . **Mix in all locations:** towed to the job by truck loaded with aggregate . . . fed directly from truck or from stock pile or pit. Can work in a single traffic lane. No set-up time required.
- . . . **Mix in all weather:** heated aggregate makes low atmospheric temperature mixing possible — allows quick repair to prevent major failures.
- . . . **Mix all types:** of bituminous materials including stabilized mixes—as well as low slump Portland cement mixes.

BARBER-GREENE COMPANY, AURORA, ILLINOIS, U.S.A.

Barber-Greene

Send me the descriptive 8-page bulletin on the Mixall.

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because it is . . .

- COMPACT AND LIGHT WEIGHT
- EASY TO HANDLE
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- GOOD FOR 24-HOUR SERVICE

THE JOB: Operating a sandblast at midnight cleaning limestone exterior of the Pennsylvania Bank Building, 15th and Chestnut Streets, Philadelphia, Pa.

CONTRACTOR: Leo J. Dawson, specializing in waterproofing and sandblasting, an enthusiastic user of Schramm Air Compressors.

Write for Bulletin SPB-51

SCHRAMM INC.

The Compressor People

WEST CHESTER • PENNSYLVANIA

SCHRAMM AIR COMPRESSORS

MAINTENANCE SHOP . . .

Continued from page 112

what routine. However, there are other elements to be watched for a satisfactory job. Camshaft and bearing must be inspected, as oil losses can occur here.

Installation of new bearings requires skill and patience. They must be inspected carefully for defects or scratches incurred in manufacture, shipping and handling. Bores in the rods and block must be clean beyond any doubt. Bearing backs must be clean and free from foreign material. A few small grains of sand, metal chips or other foreign material can soon lead to the failure of an otherwise satisfactory rebuild job.

Now for the one thing that most good mechanics strive for even where most other good practices are ignored—proper fit of bearing to the shaft. Many means are available for checking bearing clearances. One is the measuring of the shaft diameter with an accurate micrometer.

Then install the bearings in the block without the shaft in place, placing the caps in position and tightening to the right tension with an accurate torque-indicating wrench. Use correct torque on the caps or other nuts, bolts and capscrews as recommended by the manufacturer, not from prepared charts for various size nuts and bolts. In all cases, the manufacturer of the engine has good reasons for the recommendations he makes; follow them.

After the bearings are installed and the caps properly tightened, they can be checked with any accurate inside micrometer and their dimensions compared with the shaft diameter for that particular bearing. We have found this to be the most satisfactory method of assuring good bearing fit and clearances. Another method in-

BE SURE TO GET YOUR COPY of the annual Equipment Maintenance Directory of Construction Methods and Equipment. It will be published next month and will feature a listing of manuals available on the operation, maintenance and repair of construction equipment. Manufacturers spend large sums of money preparing instructions on the use and care of their machines and they are anxious that operators of their products get the dope they need. The July Directory issue will list what is available and will show the operator how to ask for what he needs.

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There are many different styles of shackles, swivels, hooks, thimbles, clips, sockets, eye bolts and other products designed for a wide variety of applications throughout industry. If you use wire rope or chain, you can be sure that Laughlin has the right — *and safest* — fittings for the job.

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Safety "FIST GRIP" Wire Rope Clips . . . Fool proof, easy to install Fist Grip clips hold rope more securely, can't go on wrong. Fewer clips are required than for ordinary types, and they will not crush or distort the rope.

SAFETY HOOKS . . . The latch locks the load, will not open until released by operator. Strong, drop forged steel hook has improved latch that leaves 80% of throat opening. 15 sizes; 3 patterns, eye, shank and swivel.

COJ "MISSING LINK" (Reg. U.S. Pat. Off.) . . . Cheaper than welding, safer than cold shut or cast link, "Missing Links" go on in a jiffy and are stronger than proof coil chain. 17 sizes from 3/16" to 1⅞".

CLEVIS GRAB AND SLIP HOOKS . . . These sturdy hooks are easily attached to any welded link chain. Pin and cotter make it easy to attach or remove for use on another job. Needs no connecting fittings or special tools.

Laughlin's new Catalog No. 150 lists the complete line of drop forged wire rope and chain fittings with illustrations, description and specifications. Write for it today.

LAUGHLIN THE THOMAS LAUGHLIN CO.
614 Fore Street
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THE MOST COMPLETE LINE OF DROP FORGED WIRE ROPE AND CHAIN FITTINGS

NEW smoothness... NEW efficiency in powder-actuated fastening...

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Designed BY Operators FOR Operators

SEE THESE NEW FEATURES:

- 1-PIECE TOOL, *for faster loading*
- TRIGGER ACTION, *for easy operation*
- PORTED BARREL, *to reduce spall*
- ANGLE-FIRE CONTROL, *for straight penetration*
- VISI-CHEK BUTTON, *for quick inspection*
- *Plus exclusive, proved-in-use ROTO-SET SAFETY SHIELD, for accurate positioning*

Faster, lighter, easier handled, the new RAMSET JOBMASTER sets a record pace for steel and concrete fastenings. Properly trained workmen quickly become skilled operators because of smooth, simple, natural motions of loading, placing, firing. Positive controls bring improved accuracy and efficiency . . . and still lower fastening costs. Ask your dealer for demonstration of how RAMSET's years of pioneering have made the new JOBMASTER the proved-in-performance leader.

Ramset Fasteners, Inc.
12117 BEREA ROAD • CLEVELAND 11, OHIO

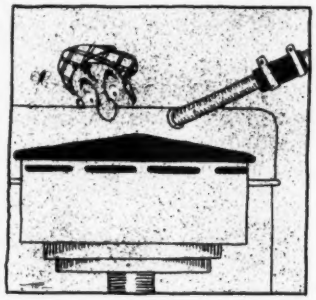
Product Patent No. 2470117. Other Patents Pending.

DON'T HAND SET...
Ramset WITH TRU-SET FASTENERS

Ask for Demonstration TODAY!

stalls the bearings and shaft with lead wire between; then the cap is removed and the lead wire miked. Also, shim stock of proper thickness can be used. But we like the dimensional method or lead wire best.

Other mechanics have other methods and the one that best gives the results desired—namely, a good job—is the one to use. Remember: All caps must be returned to the engine in the proper positions, as removed. With the bearings properly fitted, the inside



of the engine as clean as possible, and the oil circulating pump and connections cleaned and repaired, the engine is buttoned up.

The lubricating oil filter must be kept clean and the proper type of filter element installed. The matter of filter elements is very controversial, and a mere mention that only those elements recommended by the manufacturer should be used will raise a storm of protest. Actually, the manufacturer of an engine is more interested in the sale of many thousands of horsepower in equipment than he is in a few filter elements. What he wants used is what the user prefers, so long as it is the correct type. The manufacturer basically is responsible for the efficient performance of his engine, and his recommendations are helpful in getting that performance. The oil filter is the guardian of the lubricant in the crankcase and should be serviced as dictated by job conditions.

The air filter or cleaner is part and parcel of all power equipment today. It is there for only one purpose, to filter out all the dirt, dust and other foreign material that tries to get into the engine in the great volume of air that goes through it every minute it is in operation. A dirty, clogged air

(Continued on page 118)

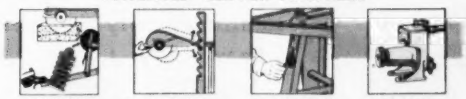
MODEL HD
One of NINE Models
from $265

Yes...

CUT ANY MASONRY MATERIAL *EASIER, FASTER* with a NEW CLIPPER MASONRY SAW

Yes, you can slice through the hardest materials in seconds with a CLIPPER MASONRY SAW. Smoother, faster cutting action than ever before. Contractors agree on the new WET or DRY cutting MODEL HD for the 100% Answer to ALL masonry cutting problems. Actually the HD is "4 SAWS in 1"—it will meet your DUSTLESS cutting requirements in confined ar. as, it will cut DRY for outside operations, it can be "CONVERTED" to a (Light Duty) *Concrete Saw* and a *Track Saw!* Yes, now greater profits than ever before with a "CONVERTIBLE" Clipper Masonry Saw!

PATENTED CLIPPER FEATURES



PRESSURE EQUALIZER | SELECT-A-NOTCH | SAVE-A-BLADE DIAL | WET-OR-DRY PUMP

With a Clipper on the job masonry cutting is easy . . . just place the material on Conveyor Cart . . . the *SELECT-A-NOTCH* instantly sets cutting head for material size. A quick setting of the *Save-A-Blade Dial* and the *Pressure Equalizer Spring* automatically cushions the blade for faster cutting —longer life. During DUSTLESS cutting the *WET-or-DRY PUMP* delivers the exact flow of water and when switching to Dry cutting the belts need not be disconnected.

. . . NOW YOUR CLIPPER IS "CONVERTIBLE"!

At any time the cutting head of your Model HD Clipper can be placed on the "CONVERTIBLE" CART....you're ready to saw concrete or asphalt patches or trenches. No more fractures beyond removal lines—no spalling! But there's more ...just set the CART on TRACKS and operate as a TRACK SAW on stone slabs. The Clipper "CONVERTIBLE" is an exclusive Clipper design.

① DRY-Masonry Saw

② WET-Masonry Saw

4 SAWS IN 1

Sold on FREE TRIAL!

Order TODAY on FREE TRIAL. Discover for yourself how Clipper will increase production . . . cut costs . . . increase profits. Only through the Clipper FREE TRIAL are you guaranteed . . . ACTUAL TEST on the job . . . FULL SATISFACTION . . . NO OBLIGATION!

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DRY-WET & B-R BLADES

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☐ DUSTLESS Model HD ☐ FREE TRIAL 91

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Recommended for Super-Severe Service

Goodall "Super-Triple S" is built to handle the longest hauls and heaviest loads with unequalled efficiency and economy. Its reliable quality assures low ultimate cost through longer life and freedom from maintenance. The weather-resistant cover will withstand severest abrasive wear. Tensile strength, friction and other details determined by the specific service requirements.

The more than two miles of Goodall Conveyor Belting used in constructing the Detroit Dam is typical of the BIG jobs on which this carefully built belting demonstrates its outstanding quality and reliability.

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Est. 1870

MAINTENANCE SHOP . . .

Continued from page 116

cleaner may restrict the flow of air to a point where horsepower is decreased and can become costly in lost production.

When the power plant is ready for its test run, it must have a suitable lubricant in the crankcase, one that is light enough to do the break-in job. It must be capable of getting to every part of the bearing area. If too heavy, it will not circulate properly, damaging hot spots will develop and your job has gone out the window. Oil pressure must be carefully noted.

Since the cooling system is responsible for the dissipation of combustion heat and generated friction heat, it must be functioning properly. All the operating parts of an engine have a relation to the success or failure of your bearing job. In spark ignition engines, the carburetion and ignition systems and the fuel used will play an important part. The fuel injection system plays its part in the diesel engine. Advanced timing and detonation knocks put added loads on bearings and could give your good job a bad start.

NOW! BUCK gives you the *only complete* automatically-portable heavy-duty HOISTING MACHINE in the world!

Set up and ready to operate in less than 25-minutes . . . instead of hours!

Ready - rigged, self-erecting tower. Self-erecting to 40-feet, additional sections may be added if needed.

Wheels retract *automatically* when tower goes up . . . return to towing position when tower is lowered.

Raises 2000-pound load at rate of 100 feet per minute.

Pneumatic trailer mounted . . . finger-tip balance. Easily towed by pick-up truck.

Send now for complete specifications
Dealerships available

BUCK EQUIPMENT CORP.

206 BUTLER ST., CINCINNATI 2, OHIO

In hats . . . or concrete, what's right for the "average" can be very wrong for you!

When you buy a hat the first one that's offered is usually size 7⅛, because that's the size that most men wear. But regardless of how much you like the style or quality, if it doesn't fit it won't do the job. And it works that way with air entraining cement, too! Although air entraining cement produces outstanding concrete on "average" jobs . . . most times it just won't "fit."

Here's why—Not only do different concrete jobs often call for different degrees of air entrainment, but variations in the aggregate and even local climatic conditions can seriously affect the amount of air actually entrained. And *all* air entraining cement is standardized by Federal and ASTM specifications to give top performance *only* under "average" conditions. So if there's the slightest doubt, add the *required* amount of a well known air entraining agent with regular portland cement at the mixer. That way you're *sure* of concrete that "fits"! It's simple, cheap, and positive!

Always remember that air entraining cement is not a "cure-all" . . . that many jobs call for the "prescription" technique. And remember, too—whichever fits your particular job best, you can't buy a better air entraining or regular portland cement than Marquette.

★ ★ ★

If you have any problems or questions on the use and mixing of air-entrained concrete, the Marquette Service Engineer will be glad to help and advise you—contact any Marquette office.

Marquette Cements

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On-the-Job
CONTRACTOR-LABOR RELATIONS

by LEON B. KROMER, JR.

Jurisdictional Dispute

WHEN YOU ARE faced with a jurisdictional dispute between two or more trades over the assignment of work do you know what to do, where to turn? Did you know that there is a board set up in Washington to handle such disputes? There is, and it was set up for the benefit of contractors and the building trades to avoid costly work stoppages and settle jurisdictional claims in an orderly manner.

The board, on which sit contractor and union representatives, is the National Joint Board for the Settlement of Jurisdictional Disputes in the Building Construction Industry and is headed up by an impartial chairman, John Dunlop.

While the Board's primary mission is to settle jurisdictional disputes and avoid strikes, it has, through its chairman (with strong support from Dick Gray, president, and Joe Keenan, secretary-treasurer of the Building Trades Department) encouraged negotiation of agreements between international unions to settle the assignment of disputed work. A number of such agreements have been worked out in the last three years.

To avail themselves of the Board's procedures, contractors should first forward to its chairman at 901 Massachusetts Ave., Washington, D. C., stipulations that they will follow: **(1)** present agreements and decisions of record (which are available from the Board or the headquarters of the Building Trades Department); **(2)** jurisdictional decisions of the Board.

Contractors who agree to follow Board procedures must:

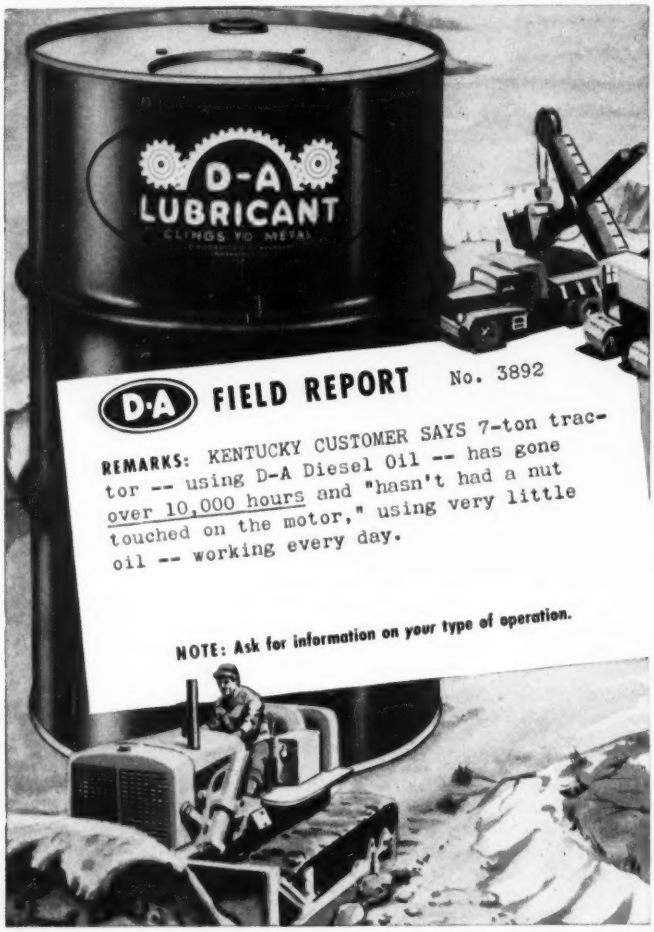
1. Make a specific assignment of work in dispute. It is a violation of the Board's rules to hold up disputed work or shut down a project because of a jurisdictional dispute.

2. Assignment should be based on
(a) A decision of record or agreement covering the disputed work;
(b) Where there is no decision or agreement, the contractor should follow local practice;
(c) If there is no local practice and no decisions or agreements, the contractor should use his best judgment in assigning the work.

3. Once the assignment is made, the contractor must continue with no change in work assignment until and unless told otherwise by the Joint Board. When told, he must comply.

4. If there is a work stoppage, the chairman of the Joint Board should be advised immediately. He will set machinery in motion to get the men back to work pending Joint Board settlement of the dispute.

The building trades unions likewise have committed themselves to certain responsibilities under the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LUBRICANT
CLINGS TO METAL
D-A FIELD REPORT No. 3892
REMARKS: KENTUCKY CUSTOMER SAYS 7-ton tractor -- using D-A Diesel Oil -- has gone over 10,000 hours and "hasn't had a nut touched on the motor," using very little oil -- working every day.
NOTE: Ask for information on your type of operation.

Write today for the new D-A Folder on current lubrication problems and solutions.

D-A LUBRICANT COMPANY, INC. • Indianapolis 23, Indiana

agreement setting up the Joint Board. Among them are:

1. No stoppage of work over a jurisdictional dispute;

2. If a complaint arises over the contractor's assignment of work the trades remain at work, and the protesting union or unions processes a complaint through union international headquarters to the Board;

3. International presidents will order the return of men to work, if there is a stoppage of work;

4. The unions will adhere to jurisdictional decisions of the Board.

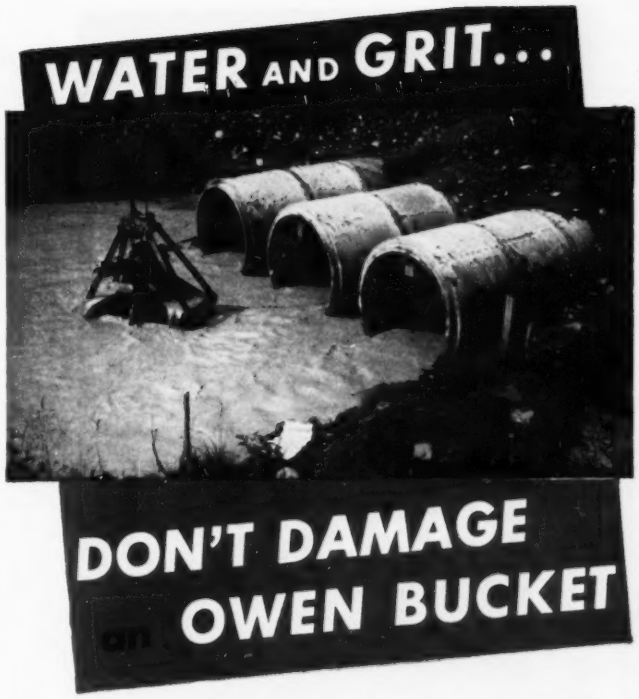
That all is not clear sailing is evident from the rising number of jurisdictional work stoppages throughout the country. Joe Keenan, a bitter foe of jurisdictional strikes in the industry, said recently, "Strikes over jurisdictional disputes are all wrong. We've got a National Joint Board to settle this sort of trouble and we are going to use it." He believes the causes stem from both contractors and local unions. Sometimes the contractor evades responsibility in selecting the trade to perform a job by letting a business agent "sell" him on using a particular trade. Keenan emphasized that it is the contractor's responsibility to assign the work in accordance with local conditions and practice, and then if a dispute arises "We can settle the argument."

On the union side he feels that business agents of continually growing local unions are under constant pressure to find work for the members and, therefore, bid for all types of jobs.

Illegal Discharge— No and Yes!

Although the Ninth Circuit Court reversed the NLRB decision in the Atkinson-Jones case, union contractors still are not relieved of the problems under which they operate since passage of Taft-Hartley's anti-closed shop provisions and representation election requirements.

In the Atkinson case (CM&E March, 1952), the contractors had negotiated a closed shop agreement in August 1947 with 15 building trades unions prior to the start of a large project at Hanford. The discharge in 1948 of a mechanic (member of the IAM) precipitated a test of the agreement. NLRB held both the closed shop agreement



With a less expertly designed bucket water would likely carry abrasive sand and grit into the bearings causing excessively rapid wear and deterioration.

Not so with an Owen.

Years ago Owen engineers learned the hazards of difficult underwater service.

And through experimentation and experience they designed bearings that retard these destructive forces.

For the protection of your buckets and in your own financial interest "buy an Owen" equipped with *abrasion resisting, pressure-lubricated bearings.*

Get the interesting Owen catalog.

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CLUTCHES, TAKE-OFFS, and REDUCTION UNITS

FUNK Products include:
Straight Power Take-Off Clutches
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Ford Tractor Conversion Kit, changes to 6 or V-8 engine, doubles the power. Makes a Ford do things you wouldn't believe possible.

With machinery becoming scarcer and prices getting higher, operators everywhere are finding it an economy to repower their equipment with FUNK Clutches and Reduction Units. Before your next repower job investigate FUNK Units. They are available in a wide variety to fit almost any requirement for shaft speed and installation space. Fit any standard SAE flywheel housing or Ford Industrial Engine. Write for specifications and prices.

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and the discharge to be illegal. It ordered disavowal of the agreement and payment of back wages to the illegally discharged employee.

The Circuit Court noted that NLRB under the Wagner Act had not assumed jurisdiction over labor cases in the construction industry. This policy was changed as a result of The Taft-Hartley amendments. While not questioning the Board's right to change its policy, the Court held that the change should not be applied retroactively, as in the present case. Neither party to the agreement was aware of any violation at the time the agreement was negotiated, and to apply the Board's order would work a hardship and be inequitable.

It is doubtful that this retroactive question will arise in many future construction cases before NLRB so there is yet no relief for contractors employing members of the building trades. More unfair labor practice cases against contractors and unions continue to come before NLRB.

Pay Back Wages

A Florida contractor, the local contractors' association and carpenters' District Council, in a case almost identical with the above (without the retroactive feature), were held to have violated the closed shop prohibitions of the Act in their labor agreement, and the three were ordered to disavow the agreement and "jointly and severally" pay back wages to the illegally discharged employee of the contractor. Contractors on a joint venture at Anchorage, Alaska, recently faced the same situation and were found, together with the union, to have violated the closed shop provisions of the act and were required to pay back wages.

To avoid a part of these difficulties, a bill (CM&E March 1952) exempting the industry from the representation election requirements of the Act was reported out of the Senate Labor Committee without a dissenting vote. The bill would make it possible for contractors to sign union shop agreements with building trades unions prior to start of construction without a representation election even in states that have so-called right-to-work laws.

Opinion expressed on Capitol Hill is that while the bill could pass the Senate it may not get through the House because of opposition of

(Continued on page 124)

Saves $500 a job

Grab a slip of paper and do your own figuring. How much lumber in a 46′ scaffold? How many man-hours to put it up? How many to take it down? How much to rig it? What's its lifting capacity? What's left of it for your next job?

Those figures will prove how an American Portable Material Elevator can save you $500—or *more*—on many, many jobs. This elevator moves on one truck. You assemble it on the ground. Tower is self-erected. Stands 46′ high, or up to 96′ by adding 10′ sections. Lifts 2500 lbs. at 90 feet a minute. Has self-dumping concrete bucket, 9′ swing boom, automatic safety device and transport wheels as extras.

You could use that money, couldn't you? To rent or buy the American Portable Material Elevator, talk to your American Hoist distributor.

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FAST cutting assured by precision engineered blade and dies.

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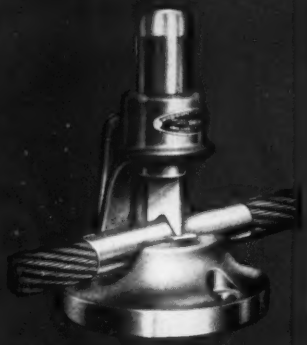

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LABOR . . . Cont. from p. 122

representatives from states having right-to-work laws, strong objections from CIO unions and the IAM which have jurisdictional disputes with building trades unions.

Do You Know That:

• In the first case involving stalemated wage negotiations in the construction industry, WSB has agreed to accept jurisdiction? The $173,000,000 Alaskan defense construction program was threatened by a work stoppage due to a breakdown in new contract negotiations between the Alaska Chapter, AGC and Alaska Council of Carpenters. Both sides have agreed to submit the dispute to WSB for a final and binding decision.

Under certain conditions WSB will assume jurisdiction over employees whose pay increases are subject to Salary Stabilization Board approval? Submit a request for transfer of jurisdiction to WSB and cover these points:

1. Established practice of not less than five years duration of relating salary adjustments as to time and amount to increases granted employees subject to WSB;

2. Majority of all employees are subject to WSB jurisdiction;

3. No top management or corporate officials are included;

4. State that if request for WSB jurisdiction is approved, such employees formerly covered by SSB regulations will thereafter be treated as with WSB jurisdiction.

A recent WSB resolution makes it clear that approval of wage increase petition will not excuse any past violations including paying the increases asked for prior to their being approved? Watch this in cases before the CISC, which must approve all wage increases for on-site laborers and mechanics prior to payment.

Paper Flood Fence

STRONG BUILDING PAPER was an unsung hero in the recent floods along the Missouri River. Around Kansas City, engineers erected flashboards 6 ft high on top of existing levees and sandbagged the river side. On the land side, waterproofed Sisalkraft paper was tacked to the boards and bulldozers then shoved dirt against the paper—which kept seepage water out of the dirt embankments.

BETTER BRAZING
—for Less!

with Westinghouse Phos-Copper and Phos-Silver

Are you still using costly silver solders to braze copper, brass or bronze? The time-tested Phos-Copper and the sensational new Phos-Silver will braze these metals at a fraction of the cost of silver solder and do the job *better* and *faster* with these advantages:

No Flux: On copper-to-copper joints, a flux is not required when using Phos-Copper or Phos-Silver.

Low Temperatures: Phos-Copper permits brazing temperature as low as 1350° F. Where even lower temperatures are required, Phos-Silver may be used as low as 1225° F.

Perfect Bonds: The high fluidity and excellent wetting properties of Phos-Copper and Phos-Silver assure strong, ductile bonds capable of withstanding repeated shock and vibration.

For further information call your nearest Westinghouse office or write Westinghouse Electric Corporation, Welding Division, Buffalo, N. Y. Ask for Brazing Booklet B-5454.

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WELDING EQUIPMENT

Portable Drainage Ditch for a Sunken Roadbed

● The rock floor of this limestone quarry, nearly a hundred feet below ground level, presents a constant drainage problem.

Men and equipment must be free to work around the clock in any kind of weather . . . free to work despite rain squalls, spring thaws or the gradual seepage of surface water through the overburden.

And, since the work location shifts as each load of stone is removed, the drainage facilities must be able to move with the shovels.

Getting the water off is a job for hose . . . a tough, flexible water carrier that can be dragged over abrasive surfaces, subjected to falling rock, snaked into out-of-the-way crevices and lengthened or shortened at the turn of a coupling.

The Bessemer Limestone Company, a Republic Rubber customer for more than a generation, uses Republic's Water Hose for this purpose.

They use Republic Hose because it stands up better, handles easier, lasts longer on the job.

Water Hose is just one of Republic's complete line of Industrial Rubber Products that is quality built and sold through Republic Distributors who are experts in their job of helping you select and apply the right hose or belt for your specific job.

Your Republic Distributor is ready to make a complete, free analysis of your requirements now. Contact him or write us today for full facts on how this analysis results in better performance, better service and less costs for you on the job.

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SALES AND ★ SERVICE ★

News of manufacturers' activities designed to assist the reader in the purchase of machinery, equipment and materials and help him obtain quick service on parts and maintenance.

Distributor Appointments

St. Paul Hydraulic Hoist, Gar Wood Industries: Rodenhausen Sales and Service Co., Philadelphia, becomes distributor for all of Philadelphia and Delaware Counties and areas of Bucks, Chester and Montgomery Counties in Pennsylvania for the full St. Paul line of hoists, bodies, maintainer blades and elevating end gates.

Huber Manufacturing Co.: Watkins-Aldridge Equipment Co., 912-916 S. State St., Jackson, Miss., will handle Huber products in central and southern Mississippi. The Herman Brown Co., Inc., 1st and Sheridan Sts., Des Moines, Ia., will cover central and southern Iowa as a Huber distributor. Coast Equipment Co., 444 Eighth St., San Francisco, represents Huber products in about 50 counties in central and northern California.

Cleco Division, Reed Roller Bit Co.: Appoints Chas. H. Harden & Co., Inc., 2221 Fourth Ave., S., Seattle; Highway Equipment & Supply Co., 21st and N Sts., Lincoln, Neb.; Long Beach Welders' Supply Co., Long Beach, Calif.; and E. W. Harman Co., 819 W. Fifth Ave., Columbus, Ohio, distributors for Cleco air tools and accessories in their areas.

Cummins-Chicago Corp.: Opens a factory service station to speed repair and service of Cummins portable tools at 318 Harvard St., Brookline, Mass.

Continental Motors Corp.: Continental purchased the business, stock and equipment of Standard Engine & Supply Co., Highway 80 at Standard St., Greggton, Tex., and will operate it as a distributorship for gasoline, diesel, and LPG engines and power units.

Warner Electric Brake & Clutch Co.: Wheel Service Co., 2735 University Ave., St. Paul, Minn., becomes distributor for Warner products for trucks, tractors and trailers in Minnesota, North and South Dakota and northern Iowa.

Detroit Diesel Engine Div., General Motors Corp.: Central Ohio Tractor Co., Columbus, Ohio, increases its facilities and radius of operation for the sale and service of General

5 or 6 INCH AUGERS·· drill up to 80 feet
4¼ INCH AUGERS·· drill to greater depths

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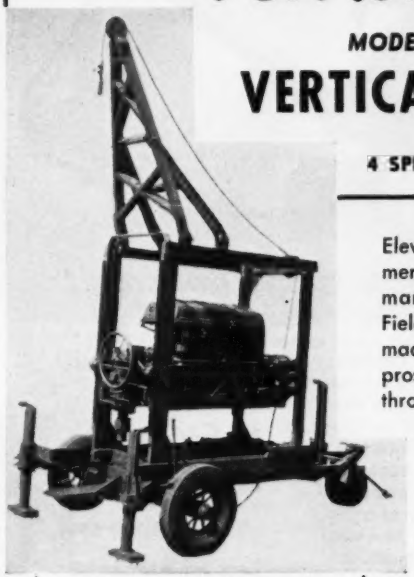
VERTICAL DRILL
HEAVY DUTY
4 SPEEDS AND REVERSE



NOTE: 3 Jacks for leveling machine. This Parmanco feature insures straight holes.

Eleven years of development have gone into Parmanco vertical drills. Field tests have been made in every type of prospecting and stripping throughout the world. Here is a mobile drilling tool, built around a 40 h.p. Ford motor and to user's conditions and requirements. In use today in many fields, it is speeding and simplifying jobs.

In a recent field test an accurate sample was taken in 30 minutes thru 25 feet of overburden. This was done adjacent to an identical test hole that had taken 8 days to drill and sample by hand.

This Model 51V has four auger rotating speeds and reverse. It has proved its ability to meet the requirements of the general prospecting field where it is not necessary to drill solid limestone.

This machine (Model 51WV) is also built around a Wisconsin 25 h.p. air-cooled motor, 4 speed transmission and self-starter.

PARIS MANUFACTURING CO. PARIS, ILL.

DID YOU KNOW
You can get a BANTAM® Back Hoe for less than
$6100.00
Less truck and mounting charges
F.O.B. Waverly, Iowa
(Price subject to change)
NOTE: Bantam backfill blade and 3-ton crane adaptor optional at extra cost, for fast field conversion.
. . . and look what you get!

For pipeline trenching, ditching, foundation excavation, etc., no other machine can equal the versatility and economy of a job-proved Schield Bantam back hoe. *Mounts on new or used truck* . . . drives anywhere over city streets, black top, or off highway at truck speeds . . . maneuvers in close quarters where bigger machines can't go . . . *digs up to 100' of 5' trench per hr.* with full range of bucket sizes . . . works to 14' depth. Investigate Bantam economy for your jobs — TODAY!

- ✓ **Complete Hoe unit** including boom, stick and bucket.
- ✓ **Big work capacity**
- ✓ **High speed mobility**
- ✓ **Low operating cost**
- ✓ **Low maintenance**
- ✓ **Fast conversion** to shovel, crane, clam, dragline, grapple, magnet, or pile driver.

SCHIELD BANTAM
Power Cranes
Shovels • Draglines

Mail coupon for details

SCHIELD BANTAM COMPANY
221 Park St., Waverly, Iowa

☐ Send details on BANTAM Hoe for truck mounting.

Name_____
Position_____
Company_____
Address_____
City_____ State_____

The *LOW-COST* machine with the *BIG* earning range

SALES AND SERVICE . . . Continued

Motors Diesel engines, by opening a fully equipped branch at Dane & Ellis Sts., Cincinnati.

Patent Scaffolding Co.: The Fred H. Burgess Co., 6225 Manchester Ave., St. Louis, Mo., will handle rentals and sales of Trouble Saver sectional steel scaffolding. The new representative also will handle rentals or sales, according to construction needs, of the other Patent Scaffolding products.

On the Sales Front

Link-Belt Co.: William L. Hartley joins Executives Sales headquarters at Chicago to specialize in the application of long-haul belt conveyors.

Independent Pneumatic Tool Co.: Inaugurates a Thor portable power tool industrial sales division under J. A. Hill, manager of industrial sales; J. F. Corkery becomes manager of electric tool sales; and G. A. Thoma is the new sales promotion manager.

Lone Star Cement Corp.: Al W. Scott is appointed sales manager of the Metropolitan Sales Division.

Nordberg Manufacturing Co.: G. E. "Gunnar" Jarpe becomes manager of a new district office in the Alworth Building, Duluth, Minn., to serve Minnesota, North and South Dakota, northern Wisconsin and upper Michigan.

Motorola Communications and Electronics Div.: Ed Falls is appointed regional manager for the states of Texas, Oklahoma, Arkansas, Louisiana and New Mexico to direct sales and service of two-way radio, power-line carrier and microwave systems.

Findlay Div., Gar Wood Industries: R. S. (Dick) Jay is sales manager; R. M. Steegman becomes assistant sales manager in charge of Buckeye equipment; and David J. Davis is assistant sales manager in charge of Gar Wood tractor equipment.

Gar Wood Industries: H. H. Hippler is named assistant director of sales and advertising.

Worthington Corp.: Appoints J. P. McArthur manager of the Philadelphia District sales office; H. W. King regional manager, West Coast sales; P. L. McManus, manager of the San Francisco district office; J. R. Hutchison regional manager for the Middle East, through Cyprus, Egypt, Greece, Iran, Israel, Lebanon, Syria, Trans-Jordan and Turkey. John S. Bachman is named manager of paver and portable mixer sales for the Construction Equipment Division at Plainfield, N. J.

(Continued on page 130)

Send your master mechanic to check on the new

GARDNER-DENVER

600

COMPARE

these Gardner-Denver values . . . no other 600-foot portable has them all

A real 600 — that's truly designed for 600-foot capacity.

Stamina — to run more hours per year for more years — to clock more hours between overhauls.

The right weight — for those long, tough jobs that demand durability.

Two-stage — gives high output for any work.

Fully water-cooled — for all-weather operation — has no complicated oil and water separation problem.

Easy starting — through use of a heavy-duty clutch.

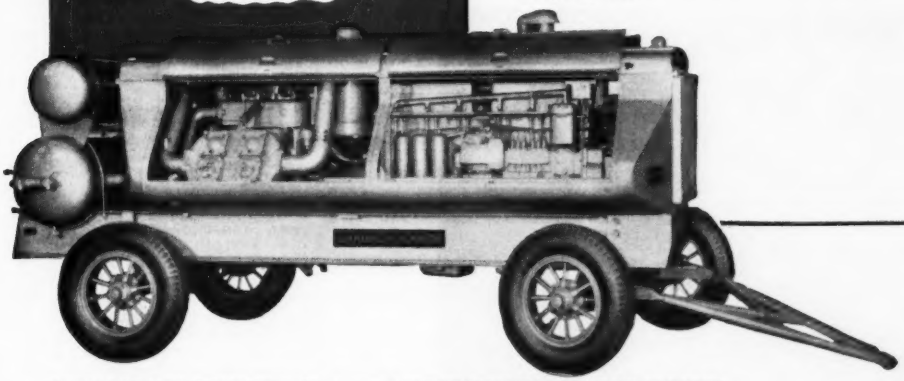
Simple controls — easy to understand — easy to use.

Moderate operating speeds — mean less wear and vibration.

Operates on sloping ground — as well as on the level.

Saves repair time — any master mechanic can make repairs in the field, with ordinary tools.

And don't forget — to compare fuel consumption, too.



Get GARDNER-DENVER and you get MORE VALUE FOR YOUR MONEY

Ask for complete specifications on the Gardner-Denver 600—the big capacity portable air compressor that's built for the discriminating buyer—and backed by Gardner-Denver's 93 years of quality manufacturing experience.

SINCE 1859 **GARDNER-DENVER**

Gardner-Denver Company, Quincy, Illinois

In Canada: Gardner-Denver Company (Canada), Ltd., Toronto, Ontario

THOROSEAL *Restored* this Filtration Plant

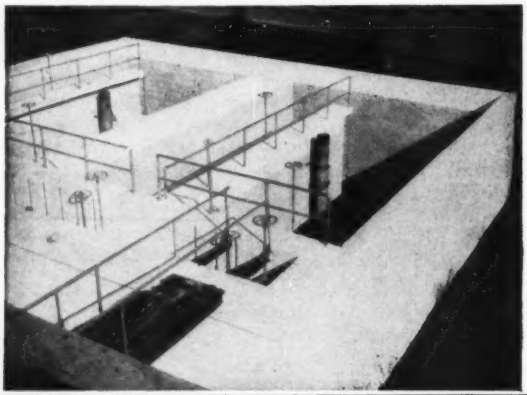
BEFORE

Example of complete break-down of masonry, due to penetration of water into body of concrete and action of frost in damp masonry.

It is amazing how THORO System products will correct a condition, such as shown in photograph. Concrete was sandblasted to remove all disintegrated material to sound concrete surface and reinforcing rods. Patching was done with THORITE Patching Mortar, bringing blistered areas to true and even lines, followed by two applications of WHITE THOROSEAL for protection.

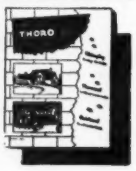
AFTER

At minimum cost, almost ⅓ the cost of other methods, concrete restoration, patching and surface protection was completed with THORO System products on Filtration Plant in Keyser, West Virginia. Contractor: Standard Construction & Waterproofing Company, of Cumberland, Maryland.



WATERPLUG	THOROSEAL	QUICKSEAL
To Stop Leaks	To Seal Surface	For Beautiful Finish

Our 20-page Brochure describes, in detail, how The THORO System products can benefit you in your construction plan. Send for brochure today, which shows methods of application and how to use the material.



Standard Dry Wall Products

Box X, NEW EAGLE, PENNA.

SALES AND SERVICE . . .

Continued from page 128

L. B. Foster Co.: R. A. Anderson becomes regional manager for the Southwest at Houston to handle steel sheet piling, railroad trackage and pipe.

Wall Colmonoy Corp.: Anthony J. Allen is appointed sales manager for the Eastern Seaboard, with headquarters in New York, for hard-facing alloys.

Pittsburgh Screw and Bolt Corp.: Alexander I. Stayman is elected vice-president, sales.

Flexible Steel Lacing Co.: This company's metal belt fasteners will be sold in Pennsylvania and New Jersey by Harry Beach; in the North Central states by Hugh L. Coats, Jr.

The Buda Company: J. C. Baseheart is appointed general sales manager of the engine division, responsible for all sales of Buda engines and generators.

W. A. Riddell Corp.: Joseph D. Whelan is named district sales representative in the western U. S. and British Columbia for WARCO motor graders.

Hewitt-Robins, Inc.: Robert E. Crane will represent Robins Conveyors, Hewitt-Rubber and Robins Engineers in a new office opened in the Porter Building, Kansas City, Mo.

Quaker Rubber Corp., Division of H. K. Porter Co., Inc.: A. H. Smith becomes district manager in a new warehouse and sales office established at 260 Schuyler Ave., Kearney, N. J., for Quaker's industrial rubber products.

Universal Concrete Pipe Co.: William H. Sprang joins company as sales engineer at Pittsburgh.

Tubesales: Elvin A. Svendsen appointed agent for steel tubing in northern California, working out of San Francisco.

Black & Decker Mfg. Co.: Appoints five district sales managers for portable electric tools. They are E. M. Stuart for Northeastern region; A. Lee Proctor, Southeastern; Raymond G. Horner, Central; William L. Poynter, Midwest; Arthur S. Boehm, Pacific Coast; and Donald S. McKeracher, Canada.

General Tire & Rubber Co.: Howard A. Bellows now is in charge of replacement tire and tube sales. John E. Powers becomes general sales manager for plastics and special products.

The David White Co.: Appoints Harold Askey national field man to coordinate sales of the firm's en-

(Continued on page 134)

AMSCO dippers keep the heat on loading at 50° below zero

North Pole weather plus loading "pure rock" are no problems to Manganese steel dippers.

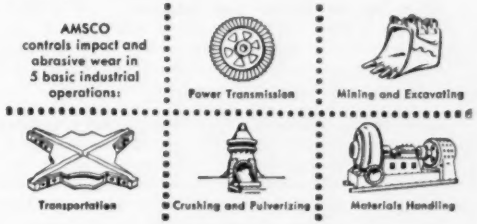
In June, 1948, an iron mine in the northwestern Adirondacks installed its first AMSCO dipper. It's still going strong—16 hours a day, 7 days a week! Old type dippers used previously lasted as little as one week. And the mining company had to employ four welders full time to keep them going.

In design, too, AMSCO dippers are made for the type of punishment low grade ore and low temperatures inflict. Except for tooth work, the only repair has been the replacement of the heel band after two-and-a-half years of this kind of vigorous operation.

Of course, not all mining and excavating operations are as tough as this one . . . but it's a good example of how to save money and manpower through the use of AMSCO products.

WHENEVER YOU MEET A PROBLEM OF WEAR CAUSED BY IMPACT AND/OR ABRASION . . .

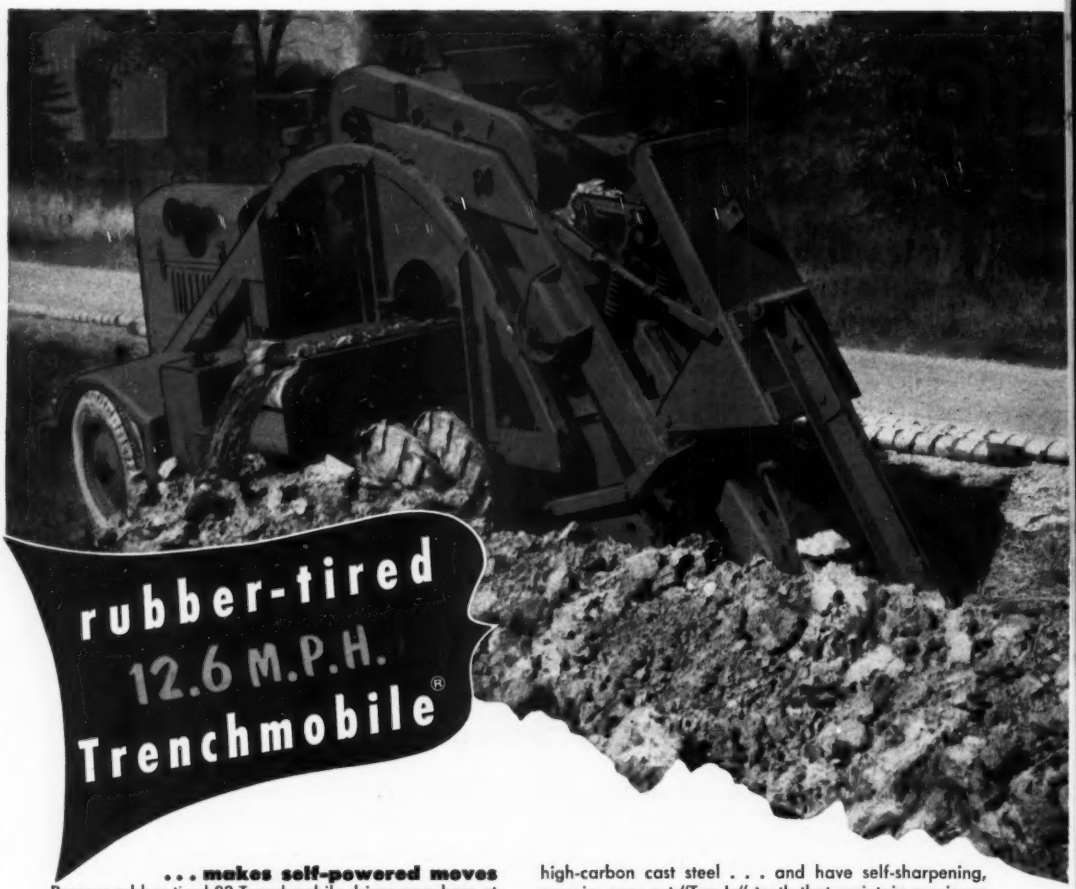
. . . find out about longer-lasting, dollar saving AMSCO manganese steel . . . world's largest producer of Manganese Steel Castings for all industry.



Brake Shoe **AMERICAN MANGANESE STEEL DIVISION**

385 EAST 14th STREET • CHICAGO HEIGHTS, ILL.

Other Plants: New Castle, Del., Denver, Oakland, Cal., Los Angeles, St. Louis. In Canada: Joliette Steel Division, Joliette, Que.
Amsco Welding Products distributed in Canada by Canadian Liquid Air Co., Ltd.



. . . makes self-powered moves Parsons rubber-tired 88 Trenchmobile drives anywhere at road speeds up to 12.6 m.p.h. . . . no waiting for trailer, loading or unloading delays. It maintains fast "work-and-run" schedules . . . a job 6 miles away can be started in less than 30 minutes from "now".

Digs up to 20 ft. per minute . . . 8 or 12 in. wide, in depths to 5 feet . . . gives you low-cost, one-man trenching on gas and water mains, off-street service connections, pipe reclamation, underground cables, lighting and sprinkling systems, foundation footings, etc.

Undercuts sidewalks, curbs, gutters, mains With reverse traction and sloping ladder boom, Trenchmobile handles undercutting, makes vertical set-ins flush with foundations, saves hand clean-up. Hinged crumber swings up, out of the way. Positive down crowd on boom starts cut fast, maintains grade in hard soils.

Shock-load protection . . . Dual-purpose friction clutch automatically protects all machinery against shock loads and drives the bucket line. Buckets are high-carbon cast steel . . . and have self-sharpening, easy-in, easy-out "Tap-In" teeth that maintain maximum digging efficiency under all soil and job conditions.

Controlled discharge . . . shiftable, reversible belt conveyor discharges spoil to either side of machine, dodges walls, poles and other side obstructions without swerving from trench line. Discharge height remains constant regardless of digging boom depth.

Hydraulically-controlled backfill blade (optional) doubles Trenchmobile usefulness, lets you handle the entire job of trenching and backfilling with one-man and one-machine economy.

On your work, all these Trenchmobile advantages can mean more jobs completed per day at lower cost, with less supervision . . . and more profit for you. It will pay you to get all the details on this 43.6 h.p., rubber-tired 88 Trenchmobile from your Parsons distributor . . . or send for bulletin. Also check Parsons 5 big heavy-duty Trenchliners®, wheel and ladder types, full crawler mounted, for constant savings on major trenching jobs.

CPZ002CM

Send for Trenchmobile bulletin

to: PARSONS COMPANY, Newton, Iowa

NAME_____

COMPANY_____

STREET_____

CITY, STATE_____

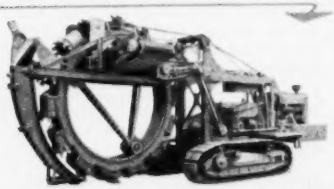
PARSONS

COMPANY • NEWTON, IOWA

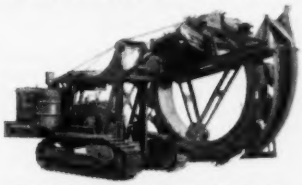
(Koehring Subsidiary)

PARSONS TRENCHING PRODUCT

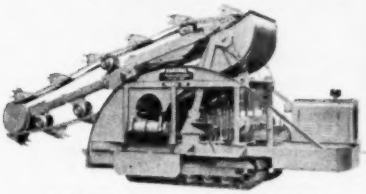
Check work capacity of these 5 Parsons TRENCHLINERS . . .



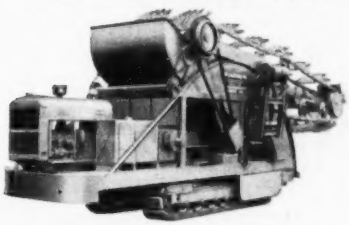
WHEEL-TYPE 202 digs 13 to 31 in. wide, 6 ft. deep; 30 digging feeds up to 18½ F.P.M.



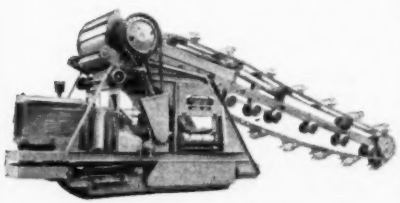
CROSS-COUNTRY 215 WHEEL-TYPE digs 13 to 31 in. wide, 6 ft. deep. up to 18½ F.P.M.



LADDER-TYPE 221 digs up to 13¾ F.P.M., in 16 to 36 in. widths and depths to 8½ ft.



LADDER-TYPE 250 has 16 to 42-in. widths, digs 12½ ft. deep; 30 feeds to 9¾ F.P.M.

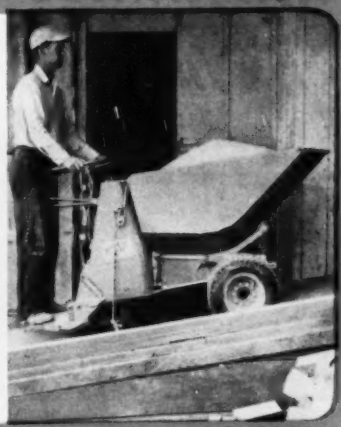


BIG-CAPACITY 310 with single boom digs 18 to 54-in. wide, 17 ft. deep . . . with dual booms it digs 72 in. wide, 12 ft. deep . . . has 45 feeds from 8 in. to 15½ ft. per min.

LOAD 1500 LBS. in Kwik-Mix Moto-Bug®

This low-cost power wheelbarrow, with 10 cu. ft. (struck) hopper, has a 1500-lb. load-carrying capacity . . . climbs 20% ramps fully loaded with operator riding on rear step. Hopper has instant gravity dump with snub-line control. There's full power forward and reverse . . . no push, no pull necessary. 3.6-to-1 gear ratio on large steering wheel gives effortless maneuvering. Interchangeable units: flat bed, 5-foot fork lift, scraper.

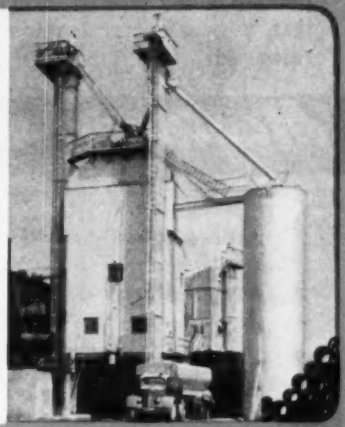
KWIK-MIX (Koehring Subsidiary)
Port Washington, Wis.



50 to 3000-YD. Johnson Central-Mix Plants

To meet your exact production requirements, Johnson Central-Mix Plants are available with a choice of 7 types of bins, ranging from 50 to 3000-cu. yd. storage capacities for aggregates and cement. For example, all-welded Portable Section Bins in 100 to 200-yd. sizes, have 4 aggregate and a central compartment for 1 or 2 types of cement. Also check Johnson batchers, silos, elevators, conveyors, hoppers, buckets.

C. S. JOHNSON (Koehring Subsidiary)
Champaign, Ill.



NO BLOCKING ON GRADES with Koehring 205

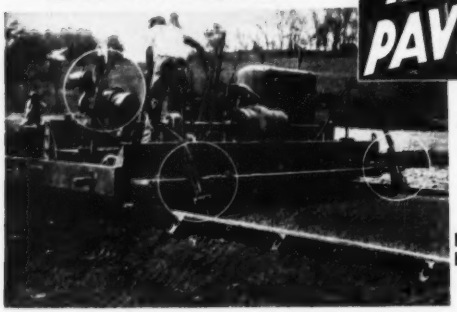
On grades as steep as 30%, there is no need to block the crawlers on this Koehring 205. Big friction brakes, controlled from cab, securely hold both crawlers . . . provide necessary flexibility to cushion brake assembly against operating shocks. No blocking saves time on every job. For excavators or cranes, check your Koehring distributor . . . 4 heavy duty sizes, 7¾ to 79½ tons lift capacity, ½ to 2½-yards dipper capacity.

KOEHRING COMPANY
Milwaukee 16, Wis.

X62

Maginniss HI-LECTRIC
CONCRETE VIBRATORS
ON THE JOB—

VIBRATING HIGHWAY PAVEMENTS



NO FLEXIBLE SHAFTS
●
ELECTRIC MOTOR IN HEAD
●
REMOTELY CONTROLLED BY OPERATOR

With a Maginniss HI-ELECTRIC Vibrator, concrete placing in any type of form is faster, cheaper, effortless, with a better looking job when the forms are removed.

Maginniss POWER TOOL CO.
MANSFIELD, OHIO

who else protects you with this kind of a

WARRANTY?

Many a manufacturer will guarantee his own products and replace them if they are defective. But the makers of Winslow Filters and Elements go a vital step further than that. Their written warranty guarantees not only the quality of Winslow products but also the safety of your equipment when these products are properly used on it. For this *extra* protection, look first and only to Winslow!

WINSLOW FILTERS

Winslow Engineering Company

4069 Hollis St., Oakland 8, Calif.

SALES AND SERVICE . . .

Continued from page 130

gineering and builders' instruments and transits and levels.

Wm. Bros Boiler and Manufacturing Co.: A. O. "Archie" Williamson is appointed manager of the road machinery division and will direct sales, advertising and new product development.

Centric Clutch Co.: Appoints Jack P. Williams Midwest factory representative for Rawson Clutch-Couplings.

Allis-Chalmers Manufacturing Co., Tractor Division: Names A. E. Dorn manager of industrial sales. H. G. Karcher is named manager of the Memphis, Tenn., branch.

Traylor Engineering & Manufacturing Co.: Appoints Douglas J. Kramm district sales manager in charge of the Western district, with headquarters in San Francisco.

Joy Manufacturing Co.: William L. Wearly is elected general sales vice-president in charge of domestic sales, including Canada and Mexico.

In the Main Office

National Tank and Pipe Co.: Names Arthur Kramer as operating engineer on its wooden tank and pipe products.

Linde Air Products Co., Division of Union Carbide and Carbon Corp.: Thomas D. Cartledge is appointed president.

Blaw-Knox Co.: W. C. Snyder, Jr., president and chief executive officer, also becomes chairman of the board of directors. James H. Elkus is appointed assistant manager of the Blaw-Knox Division and will be in charge of all departments, including sales and engineering. W. J. Kalmeyer becomes works manager and will be in charge of plant operations.

Timken-Detroit Axle Co.: Walter S. Scheel is promoted to chief engineer. In addition, three men became assistant chief engineers; Lawrence G. Boughner, development; Kenneth M. Koch, application, and William L. Pringle, military.

Bucyrus-Erie Co.: New officers elected are chairman, W. W. Coleman; vice-chairman, N. R. Knox; president, W. L. Litle; vice-presidents: P. H. Birckhead, R. W. Newberry, C. K. Charlton, P. S. Stevens and M. T. Smith; secretary, L. S. Cline, treasurer, F. C. Weiblen.

Universal Atlas Cement Co.: F. P. Diener, chemical engineer for Universal Atlas, becomes director of tests and research.

(Continued on page 138)

PRODUCTION MAGIC!

Where would American production be without Welding?

The planes, tanks, and ships . . . the petroleum that powers and warms a nation . . . the periodicals you read and the paper you write on . . . the railroads that span our country . . . the equipment that builds our roads, mines our coal, iron, and minerals . . . the clothes you wear . . . even the food you eat and milk you drink . . . these and the machinery that produces them **all depend on welding.** An arc welded alloy product is a better product. And **Alloy Rods** alloy arc welding electrodes in the familiar red metal containers are the **best** the world affords.

Alloy Rods Co.

AR-6

ALLOY RODS COMPANY, YORK, PENNSYLVANIA

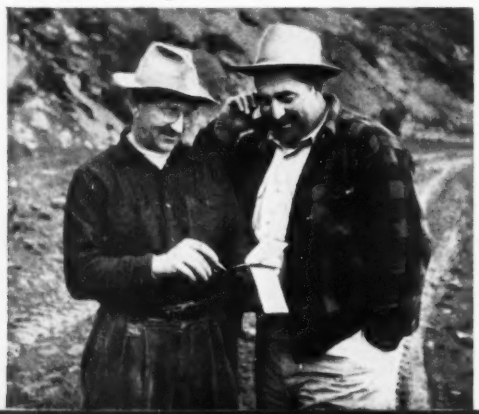
ARCALOY for stainless steel • **ARMORARC** for armor welding • **BRONZE-ARC** for bronze and cast iron • **NICKEL-ARC** for cast iron • **TOOL-ARC** for tool steel • **WEAR-ARC** for hard-facing • **WELD-ARC** for low hydrogen electrodes. **Write for specific bulletins, or consult your Alloy Rods distributor.**

Blazin' Up the Blue Ridge

TD-24s rip up 35,000 yards of rock that otherwise would have needed blasting

PUSHOVER FOR THE CHAMP. The toughest work comes easy for the Big Red TD-24. This great International crawler digs in with 148 maximum *drawbar* horsepower—the most of any crawler on the market.

HAPPY CONTRACTORS Allan Siler and Fred Moore. As Mr. Moore says, "There are two ways to move rock: this way and by blasting. Our TD-24s saved us a lot of money, working rock loose long after every other tractor was through."



It was rough work to build a modern road from Charlotte, N. C., to the cool resorts along the Skyline Drive, atop the famous Blue Ridge Mountains.

One cut and fill followed another—and one cut alone was 110 feet deep in solid rock.

That's where Macon Construction Company dug out 93,000 cubic yards of rock, and instead of blasting it all, they were able to doze and rip out 35,000 yards with two big red International TD-24 crawlers.

"We have rock here that you couldn't touch with a dozer, till the TD-24 came along," says ripper operator Roy Cantrell. *"Now we blade where we couldn't scratch before, and the ripper tears up rock that used to need blasting."*

And dozer operator Jess Leatherwood adds, *"My TD-24 pushes more, moves faster and handles easier than any other tractor—and I've run 'em all!"*

Get complete details on TD-24 capabilities from your International Industrial Distributor . . . and you'll be a TD-24 man yourself from then on in!

INTERNATIONAL HARVESTER COMPANY
CHICAGO 1, ILLINOIS

INTERNATIONAL HARVESTER

INTERNATIONAL

POWER THAT PAYS

with BIG RED

TD 24

THE WINNING TEAM. "Deep down in the cut, it seemed every night would be the end of our ripping," says co-owner Fred Moore, "but the TD-24s kept right on going, showing how you can handle rock when you've got top power and traction."

HELTZEL HELPS

CONSTRUCTION DOLLARS GO FURTHER

NASSAU DOCKS, INC. REORDERS HELTZEL BINS

Often empties over 3 bins per hour

PROBLEM: To have overhead storage of 1½", ¾", ⅜" stone and run-of-crusher limestone screenings which are delivered in barges; to fill and empty the bins quickly into trucks having 14 to 16-yard capacity; to deliver aggregates in proper proportion from the same bins to an asphalt plant on a conveyor belt. These were the Nassau Docks, Inc., problems.

SOLUTION: Nassau Docks, Inc., ordered four 18-foot diameter, 150-ton capacity Heltzel bins, and at a later date, six more. A two and one-half yard clam-shell loads the bins. For discharging, double-acting clam-shell gates (16" x 16") operate from the ground level. During busy days at Nassau Docks, three or more bins are emptied per hour. The superintendent says that any one of 4 aggregates, or any combination of them, can be moved on the conveyor belt to the asphalt plant.

● Nassau Docks, Inc., furnishes aggregates for its own asphalt plant, for contractors and Hendrickson Brothers, with whom Nassau Docks is allied. Specialized Heltzel engineering features circular and square bins; 50-degree sloping sides of cone; a choice of clam-shell, single arc or roller gates ranging in size from 12" x 12" to 30" x 30" which are air or manually operated.

Ease of assembly is testified to by steel erectors time after time. Heltzel has solved hundreds of similar problems effectively; so why don't you write regarding your storage, loading, mixing, unloading, batching or materials handling problems?

The Heltzel Steel Form & Iron Company

Construction Equipment Since 1910

WARREN, OHIO

Flex-Plane

SALES AND SERVICE . . .

Continued from page 134

Cleveland Rock Drill Division, Le Roi Co.: Jack Feucht is appointed chief engineer. Theodore Schmidt becomes assistant chief engineer.

Creative Metals Co.: J. Kenneth Rankin, a partner, has been appointed a member of the Tackle Block Industries Advisory Board of the NPA.

Gar Wood Industries: R. F. Whitworth is named manager of Gar Wood's branch division. Ross Miller becomes vice-president and general manager of a subsidiary, the National Lift Co.

Pennsylvania Crusher Co., Subsidiary of Bath Iron Works Corp.: Edwin H. Keiper is named chief engineer.

Long-Bell Lumber Co.: Jesse Andrews is elected chairman of the board. Charles N. Cory is named superintendent of logging for the company's Gardiner Lumber Co. and T. Ray Killian succeeds Cory as superintendent of the Long-Bell operation at Ryderwood, Wash.

Special Mention

Olin Industries, Inc.: Has acquired Ramset Fasteners, Inc., a pioneer in the development of powder-actuated industrial tools.

Winslow Engineering Co.: Opens new factory in Murray, Ky., for manufacture of filters and elements in east—formerly made only at Oakland, Calif.

Sonoco Products Co.: Formed Construction Products Division to handle the sale of Sonoairduct and Sonotube exclusively. Hartsville section will be in charge of E. S. Reid, assisted by J. C. Fort. J. A. Durkin will have the Eastern territory, with offices in Montclair, N. J.

Worthington Corp.: What has been known as the Dunellen, N. J. plant is redesignated as the Plainfield Works, Plainfield, N. J. Manufactured here are concrete mixers of various types and concrete handling and placing equipment; welding equipment; industrial mixers.

Willard Concrete Machine Co.: Announces that its truck-mixers and weigh-batch loaders also will be manufactured in Galion, Ohio, by the Hercules Steel Products Co., for sales in the east. The home plant at Lynwood, Calif., will continue as before.

International Harvester Co.: Neal Higgins, sales consultant, was awarded a Certificate of Service by the U. S. Department of Commerce for his work as director of the Construction Machinery Division of the NPA.

(Continued on page 142)

ROCK RATED!

FOR ROCK BOTTOM COSTS

P&H MAGNETORQUE*

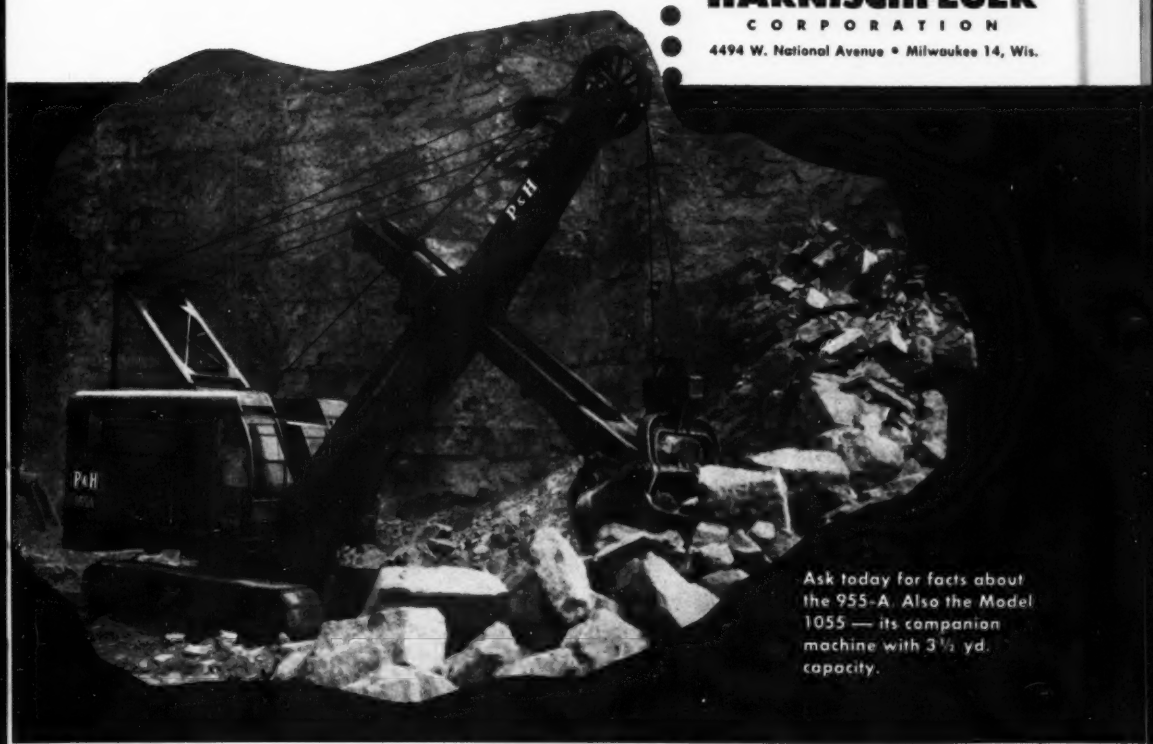
puts an end to the old swing frictions

We'll make this promise: You'll never have to "baby" this machine, even in the heaviest going! It's *built* for it — all-welded of alloy steels throughout, the toughest construction known. *It means steady digging.*

But the big pay-off in extra production comes with Magnetorque electric swing — enough faster to deliver 5 cycles to 4 on other machines in the 2½ yd. class. And the "time-outs" for adjustment and replacement of swing friction linings can now be salvaged for increased yardage. Magnetorque lasts the life of the machine.

*T.M. of Harnischfeger Corporation for electro-magnetic type clutch.

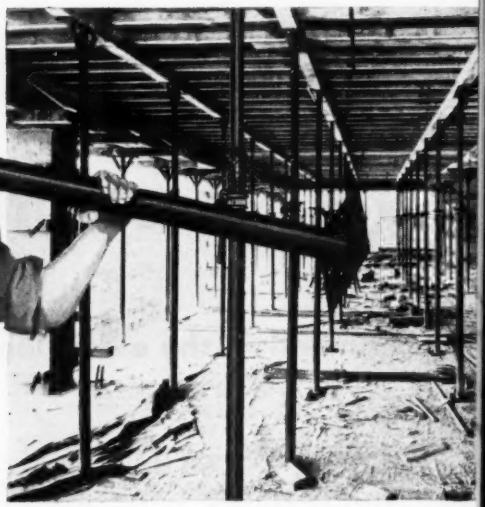
HARNISCHFEGER
CORPORATION
4494 W. National Avenue • Milwaukee 14, Wis.



Ask today for facts about the 955-A. Also the Model 1055 — its companion machine with 3½ yd. capacity.

POWER SHOVELS • CRAWLER AND TRUCK CRANES • OVERHEAD CRANES • HOISTS • ARC WELDERS AND ELECTRODES • SOIL STABILIZERS • DIESEL ENGINES • PRE-FABRICATED HOMES

SPEED UP YOUR



ACROW SHORES Set in Seconds

ACROWS are truly one-man shores. One man can set an ACROW Shore accurately in a matter of seconds by following three simple steps:

1) Lift inner tube to approximate height desired . . .

2) Insert steel pin in nearest hole . . .

3) Turn collar handle for final adjustment to the smallest fraction of an inch.

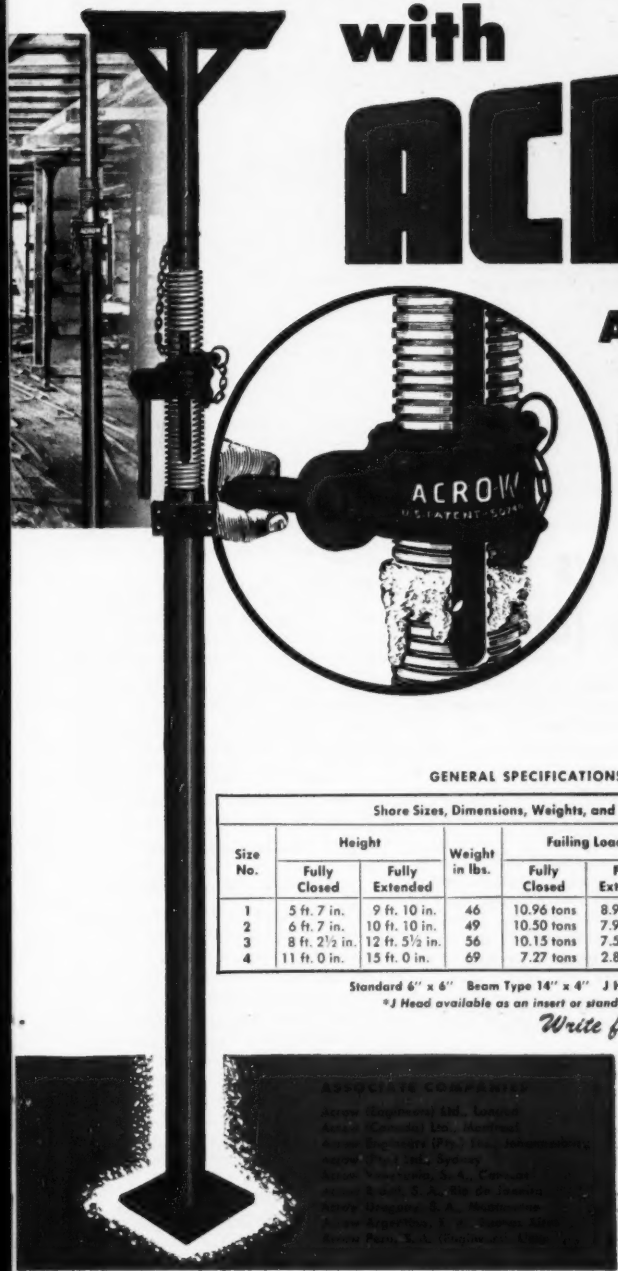
Stripping goes faster, too – just a twist of the collar handle and ACROWS are down . . . ready to telescope compactly for easy transport to the next job or for space-saving storage.

ACROWS give you 100% salvage – they can be used on all construction jobs with their complete range of four sizes. Use them over and over again – ACROW'S all-steel construction is practically indestructible.

Over 1,000,000 Acrow Shores in Use!

ACROW

CONSTRUCTION with ACROW



ADJUSTABLE STEEL SHORES

ACROW Steel Shores are engineered and built from base to head for the fastest, safest, securest support on the job. Completely positive simple action leaves no chance for slippage. There is no cutting, wedging, or nailing to eat up time and money. And ACROW Shores have no jacks, levers, or supplementary tools to lose.

EXCLUSIVE ACROW SELF-CLEANING FEATURE makes possible rapid stripping operations. A unique patented extension of the collar nut extends over a segment of the threaded tube (see left). When collar handle is turned in stripping operation, encrusted concrete, dirt, and grit are removed from the thread—making ACROWS instantly ready for use on the next job.

GENERAL SPECIFICATIONS

Shore Sizes, Dimensions, Weights, and Capacities

Size No.	Height		Weight in lbs.	Failing Load		Recommended Safe Working Load	
	Fully Closed	Fully Extended		Fully Closed	Fully Extended	Fully Closed	Fully Extended
1	5 ft. 7 in.	9 ft. 10 in.	46	10.96 tons	8.97 tons	8210 lbs.	6720 lbs.
2	6 ft. 7 in.	10 ft. 10 in.	49	10.50 tons	7.90 tons	7840 lbs.	5975 lbs.
3	8 ft. 2½ in.	12 ft. 5½ in.	56	10.15 tons	7.55 tons	7490 lbs.	5600 lbs.
4	11 ft. 0 in.	15 ft. 0 in.	69	7.27 tons	2.89 tons	5225 lbs.	2050 lbs.

Standard 6" x 6" Beam Type 14" x 4" J Head 14" x 4"*

*J Head available as an insert or standard head.

Write for Free Information on Acrow Products

ASSOCIATE COMPANIES
Acrow (Engineers) Ltd., London
Acrow (Canada) Ltd., Montreal
Acrow Engineers (Pty.) Ltd., Johannesburg
Acrow (Pty.) Ltd., Sydney
Acrow Australasia, Ltd., Auckland
Acrow S.A., Rio de Janeiro
Acrow Overseas S.A., Montevideo
Acrow Argentina S.A., Buenos Aires
Acrow Peru, S.A., Lima

ACROW, INC. Dept. CM-6
510 N. Dearborn St., Chicago 10, Illinois

Gentlemen: Please send me the following Free Bulletins (Please Check)

☐ Acrow Shores ☐ Trench Jacks
☐ Column Clamps ☐ Telescopic Floor Joists

Name .....
Company .....
Address .....
City ..... Zone ..... State .....

Dependable ignition pays off —on construction jobs

Ignition failures can knock your engines cold and throw working schedules completely out of kilter. But you don't have to worry about ignition troubles when you've got a WICO XHD *heavy duty* magneto on the job.

This magneto always feeds a hot, lively spark, even under the toughest conditions. It can keep running for weeks . . . even months . . . without let-up. Sand, dust, and dampness can't stop it. Shock and vibration bounce right off it without any effect. It is this performance that has made Wico the choice of leading manufacturers as original equipment on their engines.

The WICO XHD is extra rugged in every way. Its heavy duty coil is molded in solid plastic that takes long exposure to wet weather without arcing through. Large diameter tungsten breaker contacts are long-wearing, easy to adjust. All bearings are factory lubricated . . . never need attention. The rotor is a sturdy one-piece unit with Alnico-6 magnets cast directly to the shaft. Weatherproof finish covers all exposed metal parts. Available for four or six cylinder engines, with either flange or base mounting.

See your equipment dealer for full details on the complete WICO line, or write us for a list of WICO Authorized Service Stations nearest to you.

WICO Electric Co., West Springfield, Massachusetts

WICO

SALES AND SERVICE . . .

Continued from page 138

Johns-Manville Corp.: C. George Dandrow, vice-president, is the new president of the New York Building Congress—the first non-architect president of the group in 31 years.

Association Activities

The Gypsum Association: The lost time injury frequency rate in gypsum-producing plants dropped to an all-time low of 12.88 per million man-hours worked in 1951. The Association has sponsored an intensive safety training program for the last nine years. During that time accidents have been reduced by more than 50%.

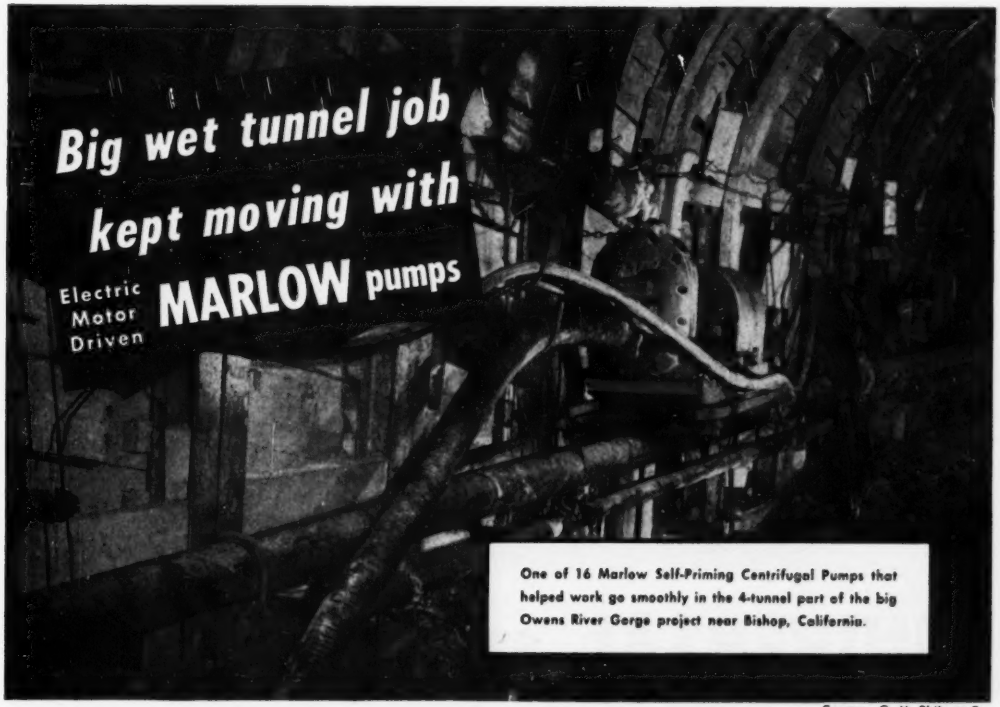
National Association of Home Builders: Is cooperating with Trinity University, San Antonio, Tex., in a new college course in home building that will be available next fall. Course carries a B. S. degree in business administration—a field where home builders have had most of their problems.

National Constructors Association: Is giving full support to pending Congressional legislation to overcome the Supreme Court decision in the "Wunderlich Case"; to restore the right of judicial review of decisions of Federal agencies on claims under Government contracts.

The Moles: David Bonner, vice-president of Frederick Snare Corp., is the new president of this association of tunneling and heavy construction men. Other officers: Richard E. Dougherty, consulting engineer, 1st vice-president; George F. Ferris, Raymond Concrete Pile Co., 2nd vice-president; Charles E. Simmons, Bethlehem Steel Co.; sergeant-at-arms; Harry T. Immerman, Spencer, White & Prentis, secretary; Howard P. Maxton, Raymond Concrete Pile Co., treasurer.

Dredge for Indonesia

THE REPUBLIC OF INDONESIA is getting a new dredge just completed by Ellicott Machine Corp., Baltimore. It is of the hydraulic pipe-line type and can dig to 39 ft below the surface of the water; discharge 650 cu yd of material per hr up to 8,200 ft away. It is 160 ft long, 40 ft wide and has quarters for 32 men. Dredging pumps are driven by two 1,320-hp diesel engines; a 500-kw diesel-driven generator provides electric power for the hauling winch, cutter motor and auxiliaries. The dredge will be towed 11,000 mi to Djakarta and will be used to maintain harbors and improve waterfront area.



One of 16 Marlow Self-Priming Centrifugal Pumps that helped work go smoothly in the 4-tunnel part of the big Owens River Gorge project near Bishop, California.

Courtesy G. M. Philpott Co.

Marlow electric motor driven Self-Priming Centrifugal Pumps — 16 of them — were used by Owens Tunnel Contractors to help keep water out of the way during tunneling on the Owens River Gorge project. The four tunnels varied in length from 1/3 mile to 7 miles . . . long hard digging. Two of the tunnels were very wet but the Marlows took the flood of water in stride. With the water under control, pouring of the 10½ foot diameter concrete tunnel lining moved along on schedule . . . another success to which Marlow pumps contributed heavily.

Electric motor driven Marlow pumps are used more and more by contractors. Where electric power is available, they offer big advantages in automatic operation and lower operating costs. Electric motor or gasoline engine powered — Marlow Self-Priming Centrifugal Pumps have always been able to do more than any other pumps. The astounding new Marlows are *the greatest contractors' pumps ever built.* They prime faster and higher. They handle more water at lower cost. They are non-clogging, maintenance-free and last longer than any others. And the Marlow selection is largest — models in all AGC ratings, 4M through 240M, 1½" to 10" — plus many other models for special use.

— Catalog promptly sent —

A Marlow is the only self-priming centrifugal made with a REPLACEABLE IMPELLER AND DIFFUSER. After long, hard use, they can be easily and inexpensively replaced with new ones to restore the pump *to full original efficiency.* A patented Marlow feature.

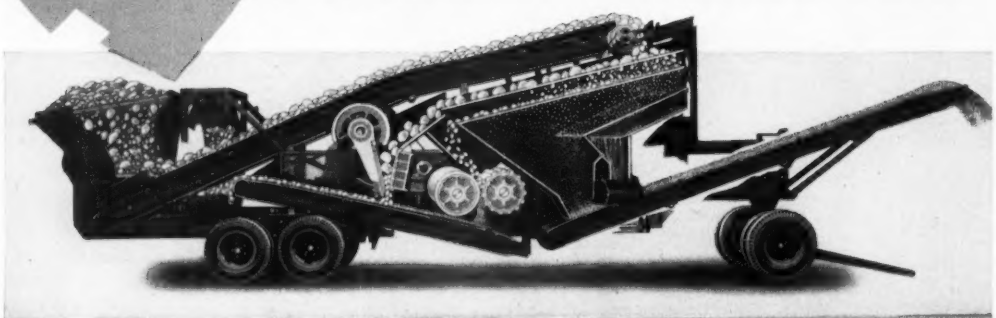
MARLOW PUMPS

RIDGEWOOD, NEW JERSEY

Manufacturers of the World's Largest Line of Contractors' Pumps Including the Famous Marlow Mud Hogs

designed for MORE PROFITS

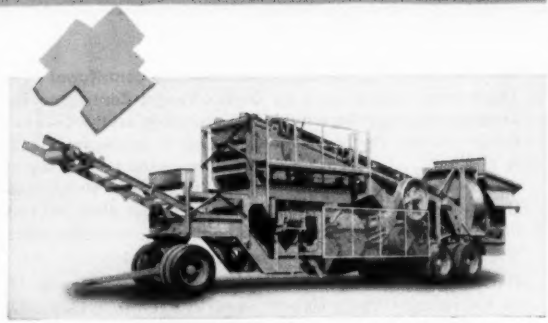
WITH UNIVERSAL'S "SCALPING DECK" METHOD



UNIVERSAL 880 GRAVELMASTER

Universal's "Scalping Deck" method of screening assures balanced loads to the jaw and roll crushers . . . provides greater efficiency and economy, protects screen, jaws, and rolls. You get better gradation of material, less jaw wear, less roll shell wear, longer screen life, savings in power, more effective use of screening area, faster material flow, greater plant output. These all add up to more tons per hour at less cost per ton with the new Universal 880 Gravelmasters.

Strictly for profit . . . buy a Gravelmaster. Get top engineering design. Get the rugged stability of a permanent installation plus ready portability to produce profitably anywhere.
Complete, compact Universal Gravelmasters are built in a range of streamlined sizes with capacities from 75 to 270 tons per hour. They're used extensively as complete gravel crushing, screening and loading plants, or to step up production as secondaries following a primary in quarry operations. For complete details on the size that meets your requirements ask your Universal distributor or write.



THE NEW UNIVERSAL 880 GRAVELMASTER SENIOR "R"

1036 roller bearing jaw crusher.

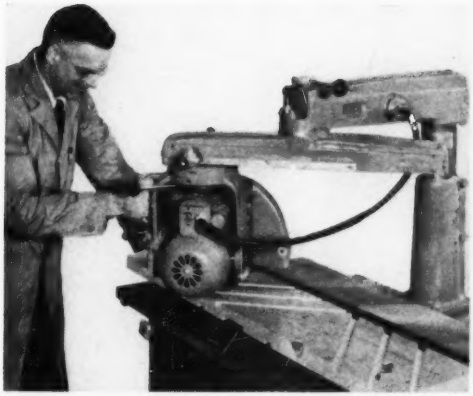
3022 roller bearing roll crusher.

Plant mounted power or side drive through universal joint from separate truck mounted power. An outstanding new high capacity Gravelmaster, designed to meet state highway weight limitations.

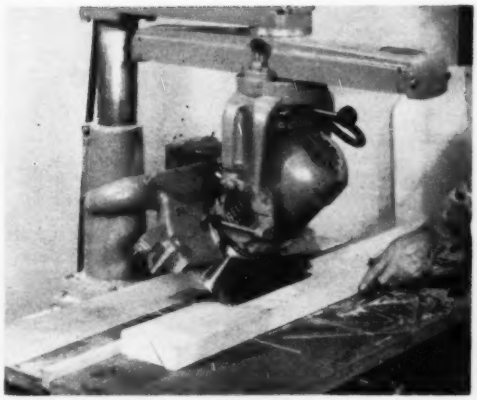
UNIVERSAL ENGINEERING CORPORATION division of PETTIBONE MULLIKEN CORP.

327 8th St., Cedar Rapids, Iowa
Phone 7105

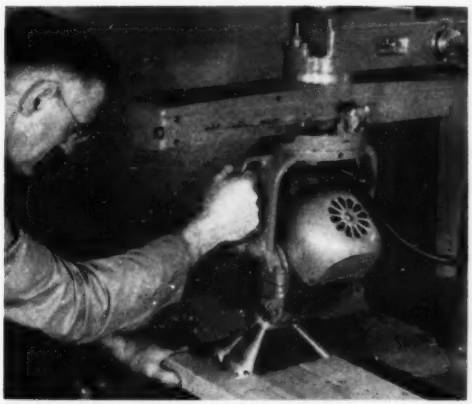
4700 W. Division St., Chicago 51, Illinois
Phone Spaulding 2-9300



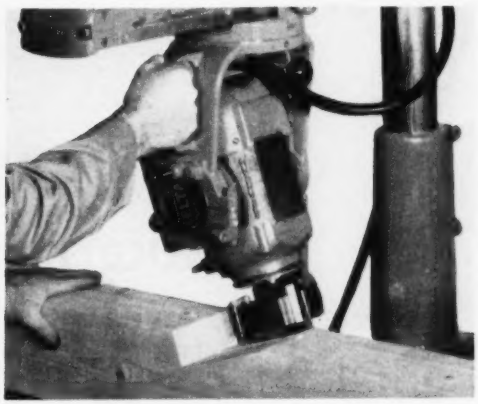
Right- and left-hand miter cuts
Saw arm turns on center pivot through full 360 deg, letting operator cut in any direction, at any angle, always above table.



Stock can move by stationary saw
Adjustable guide fence, clamped by knobs in front, precludes reaching past saw and keeps motor mount clamped near center of arm.



Angle gang cutting is simple, sure
Mass bevel cutoff of 2x4's is an easy matter. Note flat bottom on motor for deep cuts, recessed switches, removable power plug.



Notches, bevels, drills and routs
Perfect matching of notches in rafters will prevent floating, shifting or unevenness when fastened to framing later on.

Center Pivot Makes Radial Saw More Useful

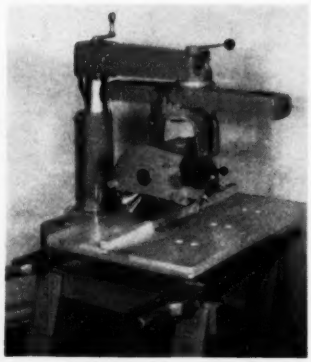
ONE OF THE APPARENT TRENDS in construction tools is the swing to wider use of radial saws, since they can be used in two ways. It's sometimes desirable to feed lumber into a fixed blade; at other times it's not only better—but safer—to hold the material and move the saw over it. This is particularly true in gang-cutting several pieces simultaneously for uniformity.

Radial saw manufacturers have been quick to adapt their machines to the complex needs of on-the-job work. Rockwell Manufacturing Company's Delta Power Tool Division introduces a tremendously useful model; one that incorporates all the outstanding practical performance, maintenance and safety features.

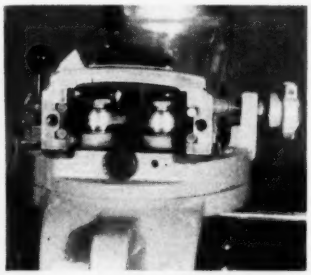
The new 16-in. radial saw is backed by 25 yr of development and study, and will crosscut, angle, rip, shape, rout, sand, bevel, drill and perform an amazing number of multiple cuts with ease and safety.

Perhaps the most outstanding feature is its center pivot point which allows saw-arm swing through a full 360 deg, above the table. Heretofore radial saw arms have always been hinged behind the table so that maximum swing has always been somewhat less than 180 deg. With full-circle pivot swing, an operator can get desired capacity at any angle, and can cut either left or right.

Support for the machine frame begins right at the front of the saw table. Both the over-arm and column assemblies are bolted to this machined casting, forming a C-type support similar to that used for radial drill machines, and it holds the saw-arm, yoke and motor



PORTABLE MODEL is moved easily by two men when mounted on carrying shafts. Vertical adjustment handle here is at top of column.



HORIZONTAL CARRIAGE ROLLERS ride on side track rods that can be turned as they wear.

assembly firmly and sturdily.

The work top is mounted on this machined plate, and adjustments can be made at each end of the table to provide accurate control of wood variable at point of cut. This is the fastest method we've seen for adjusting parallel of saw arm and table top.

Almost everyone is familiar with the age-old wedge method of securing a guide fence, or with the constant chance of error when using an end-clamping type. Two front control knobs on the Delta, when loosened, immediately take pressure off the guide fence. It can then be removed, re-inserted at the farthest inner edge of the table (or in between any of the four flat table strips) and gripped securely again by tightening the front knobs.

Those strips are 4 in. wide and provide sure, quick guide-fence adjustments. The knob setup also eliminates going behind the table for adjustment, removal or replacement. In fact, every adjusting movement on any crank, knob,

(Continued on page 151)

4 REASONS ELLICOTT DREDGES make more profits for you!

1 ***Continuous operation*** is assured—Ellicott Hydraulic Dredges discharge the material directly to the final disposal point. Digging and transporting are performed as a single operation; fleets of barges and tugboats are not needed.

2 ***Low operating costs*** are assured with Ellicott Dredges. You use less fuel, less labor, and need fewer repairs . . . your assurance of higher profits!

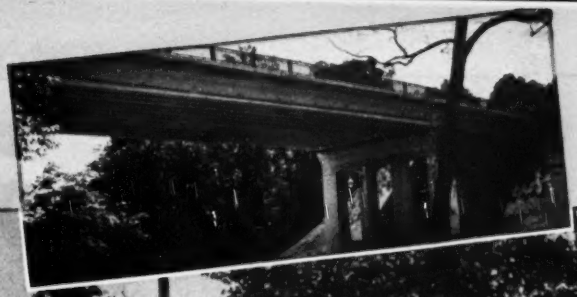
3 ***Maximum versatility*** is built into every Ellicott Dredge, making possible future use on various jobs. Maintaining and improving channels—refilling beaches—irrigation and flood control—all can be performed with your Ellicott-Dredge.

4 ***Highest possible output*** at the lowest operating cost is engineered into every Ellicott Dredge. Operation is economical no matter whether the Unit is large or small.

For more information about Ellicott Dredges and how they can make more money for you, write for our new General Catalog No. 825, which shows over 100 views of Ellicott Dredges. Address · ELLICOTT MACHINE CORPORATION, 1605 Bush Street, Baltimore 30, Maryland.

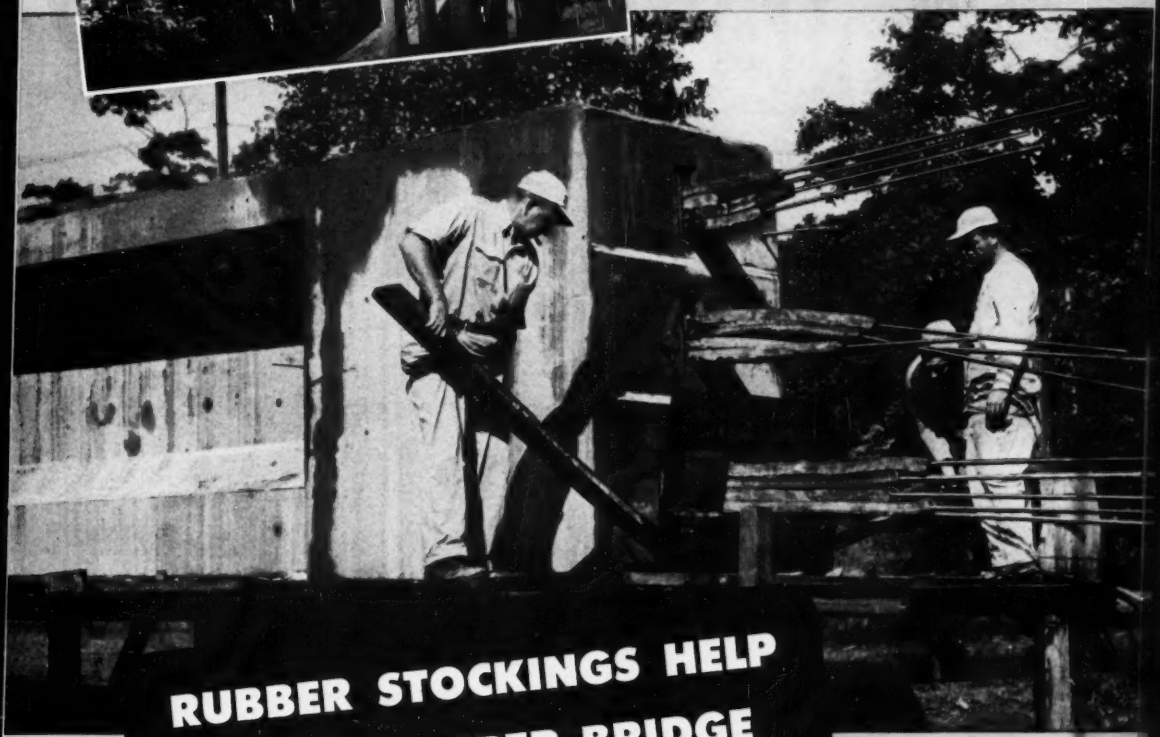
ELLICOTT®

ELLICOTT DREDGES



WALNUT LANE BRIDGE

Philadelphia, first bridge to utilize new pre-stressed concrete method of construction.



RUBBER STOCKINGS HELP BUILD SUPER-BRIDGE

Quaker Industrial Rubber Cores Form Channels For Important Pre-Stress Cables

Molds for the small "tunnels" that carried the wire cables in America's first pre-stressed concrete bridge . . . that's the job Quaker Rubber Cores did with outstanding success.

Quaker's laboratory engineers worked with the bridge builders in developing a specially compounded rubber core with a high degree of resiliency. Into the 1⅛" hole in the center of these cores was inserted ¾" pipe to support the rubber. Then concrete was poured into the forms. When it had set, cores and pipe were removed. Wire cables were inserted in the small "tunnels" left by the cores and drawn tight by hydraulic jacks, to provide the pre-stressing.

Another of the many examples of how Quaker Rubber Products and laboratory engineers are constantly at work helping the construction industry pioneer new ideas. Whatever your requirements—conveyor or transmission belting, hose, packings, or specialized moulded rubber products—there is a Quaker "Production-eered" Product and the services of a Quaker representative to help you improve your output and lower costs.

Every Quaker Industrial Rubber Product is "Production-eered"—engineered to provide maximum life, efficiency and production on each particular type of installation. For timely production tips, get the new, free booklet on "Production-eered . . . For Greater Output."

Get This Book

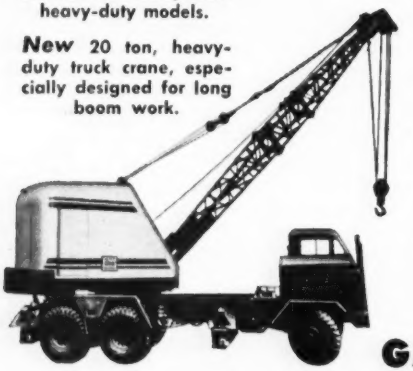
QUAKER RUBBER CORPORATION

DIVISION OF H. K. PORTER COMPANY, INC.

PHILADELPHIA 24, PA. · BRANCHES IN PRINCIPAL CITIES

New ¾ yd. shovel, in standard-duty and heavy-duty models.

New 20 ton, heavy-duty truck crane, especially designed for long boom work.



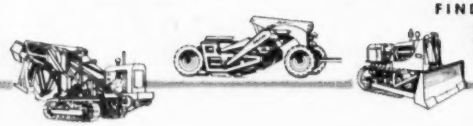
Designed to Combine These Outstanding Features . . .

- **INSTANT MANUAL CONTROLS** give a positive, smooth "feel" of the machine. Operator maintains a steady working pace.
- **POWER ACTUATED DRUM CLUTCHES** with exceptional sensitivity of control. Reduce operator fatigue, increase output.
- **DUAL RIGHT ANGLE DRIVE** connected by flexible universal couplings. Eliminates trouble factors of chain drives.
- **FLUID COUPLINGS,** offered as optional equipment, reduces shock loads — gives ultimate in smooth lift crane operation.
- **INDEPENDENT CHAIN CROWD** is powerful and positive, gets full engine power into the crowd . . . also many other features designed to insure efficiency at minimum operating expense.

GAR WOOD INDUSTRIES, INC.

FINDLAY DIVISION • EXECUTIVE OFFICES • WAYNE, MICHIGAN

Construction Equipment: Excavators, Scrapers, Dozers, Ditchers, Spreaders, Finegraders, Truck-mounted Road Graders. Truck Equipment: Dump Truck Bodies & Hoists, Winches & Cranes, Refuse Collection Bodies, Elevating End Gates.

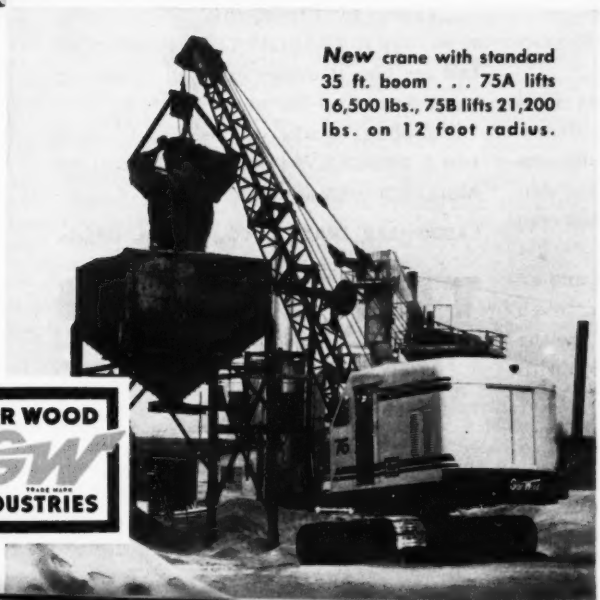


Shovels

Gar Wood's 75 Series shovels are new to the civilian market although hundreds are in use by the armed forces . . . Three base machines are offered. The 75A, a standard duty ¾ yd. model; the 75B, heavy-duty ¾ yd. model and the 75BT, 20 ton truck crane.

All models are easily convertible *in the field* for shovel, lift crane, clam, dragline, magnet, trench-hoe and pile driver work. *Only* Gar Wood offers the new Foundation Borer, an attachment that opens an entirely new source of profit to power excavator operators. A few Gar Wood features are listed below. Check your Gar Wood shovel distributor for full information.

and TRUCK CRANES

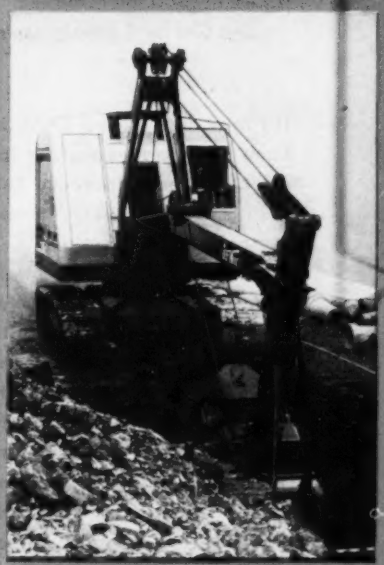


New **crane with standard 35 ft. boom . . . 75A lifts 16,500 lbs., 75B lifts 21,200 lbs. on 12 foot radius.**

GAR WOOD GW TRADE MARK INDUSTRIES

New FOUNDATION BORER

A Gar Wood Exclusive! Combines belling and boring for caisson holes into one operation for faster, cheaper construction of foundations.



New TRENCH HOE

¾ yd. dipper capacity with 3 other optional dippers. Digs to 17'10" depth with a cutting width of 39½".

Here's Helmig's T6 TRAXCAVATOR loading sand and rock to make way for a commercial development. The 1¾ cu. yd. T6 is one of five TRAXCAVATOR models.

"TRAXCAVATOR® performance SOLD ME!"

says Charles F. Helmig, contractor, of Pekin, Illinois

If you've once tried a TRAXCAVATOR, you know there is no equal for its steady, day-after-day performance. Ask Charles F. Helmig, Pekin, Illinois, veteran of 34 years of excavating contracting.

He reports: "We bought our first TRAXCAVATOR back in 1938 and, with over 10,000 work hours to its credit, it still turns in a full day's work. The performance of that T4 sold us on the second and it proved even more successful on our work. Now we've got 4 TRAXCAVATORS—a T6, two T4s and an HT4—and we're giving them all a tough workout in all types of material. I like the way they buck into rock and come up with a load. We've tried others on our work of digging basements, levelling, ditching, tree-pulling, loading, but none can measure up to all-around TRAXCAVATOR performance."

Take a hint from this veteran excavator. Try a TRAXCAVATOR on your job and see how it outperforms all others—in work done and in money saved. Your "Caterpillar" Dealer will be glad to show you a TRAXCAVATOR at work—call on him . . . or write direct.

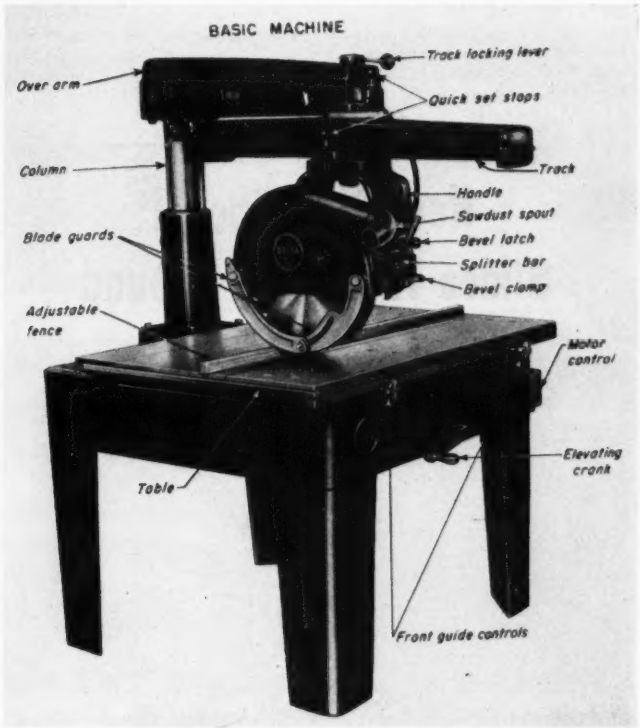
CATERPILLAR TRACTOR CO., Peoria, Illinois

TRACKSON

A SUBSIDIARY OF CATERPILLAR

TRAXCAVATORS®
TRACLOADERS
PIPE LAYERS
ANGLEFILLERS

RADIAL SAW . . . Continued from page 146



CONVENIENCE AND ADAPTABILITY of the basic machine is emphasized by controls and adjustments located directly in front of the operator, promoting safety at the same time.

scale, latch or lever is done "up front", with no need to walk around the table or reach past the saw blade.

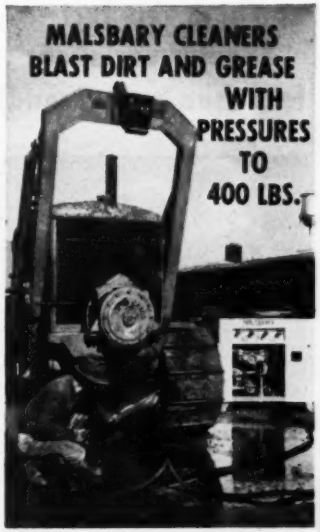
Delta provides two ways for setting the saw blade parallel to the guide fence. Since the yoke can swivel a full 360 deg horizontally while the arm track is stationary, adjustments for wide ripping can be made on ball bearings. On close, narrow ripping, or when shaping or routing, the arm track can be swiveled through a full circle, eliminating over-arm interference, in addition to clearing the work table.

Ordinarily, saw carriage rollers ride on the machined grey iron of the arm track, or at best, on a flat strip of tougher metal. Even the best eventually wear out, however, and cutting becomes inaccurate. Then follows downtime while arm tracks are re-machined or new strips installed.

On this new 16-in. rig the carriage wheels are horizontal, and they ride on long, ⅜-in. dia hardened track rods of 56-58C Rockwell hardness. These offset the tougher 60-62C of the bearing races and when wear finally occurs, the front cap can be removed, rod clips loosened and the rods turned slightly to provide a brand new surface. Result: life-time performance and no down-time for machining.

There are quick-set stops at all bevel and miter positions at 30, 45, 60 and 90 deg. The 16-in. blade cuts to a 5⅛-in. depth. It will crosscut 25 in. wide on 1-in. stock; 22 in. wide on 5-in. stock, and will rip to 38½ in., well past the center of even a 6-ft panel. Motor is a direct-drive, 55-deg C type. It is available in 3 and 5 hp for single-phase ac power, and 5 or 7½ hp for two- or three-phase ac lines. A magnetic thermal switch provides overload and undervoltage protection.

At a demonstration recently, an interested but dubious carpenter foreman mentioned that he had never been able to make a reverse 45-30 rafter cut satisfactorily on a radial saw without flipping over



Prevent corrosion and abrasion . . . uncover wear before it causes damage and costly downtime . . . by cleaning regularly with MALSBARY Heavy-duty Cleaners. Clean equipment is easier to repair, too—saves up to 40% of mechanics' time. MALSBARY patented pumping system delivers plenty of hot solution at 250-400 lbs. pressure, cleans big tractors in 2 hours or less (conventional steam cleaners require 4 to 8 hours).

ONLY MALSBARY GIVES YOU ALL 5 QUICK-CLEANING ACTIONS

1. HIGH PRESSURE STEAM CLEANING.
2. HIGH PRESSURE HOT WATER.
3. HIGH PRESSURE COLD WATER.
4. LOW PRESSURE WET STEAM.
5. LOW PRESSURE WARM WATER.

See for yourself how MALSBARY cuts cleaning time and helps reduce repair costs and downtime. Mail coupon TODAY for on-the-job demonstration. 21

MALSBARY MANUFACTURING CO. SINCE 1921

Room C6, 845 92nd Ave., Oakland 3, Calif.

I AM INTERESTED IN

☐ Free Booklets on MALSBARY Cleaners
☐ On-the-job Demonstration
☐ Names of Nearby MALSBARY Users

Name _____ Position _____

Business _____

Address _____

Check this fact— Angular variation: less than one second!

Model No. 7014 with "A" standard. "U" type also available. $575* complete with tripod, case and field equipment.

Yet this improved White instrument costs you less than any other quality engineers' transit

NOT only does David White calibrate the graduations on its Engineers' Transit within less than one second. But that accuracy is yours for years and years! Reason: a new Swiss dividing engine of the latest design cuts the graduations into *solid silver*.

What's more, White's unexcelled coated optics provide a clear, sharp image — without halation even under adverse conditions at long distances. Other added refinements that cost you less include the totally enclosed leveling screws, waterproof compass box and hand-fitted, anti-friction, virgin hard bell metal centers.

See your dealer for full information on the complete David White line of Transits, Universal Level-Transits, Levels, Theodolites and engineering supplies. Or write for new Bulletin 1052 to DAVID WHITE COMPANY, 343 W. Court Street, Milwaukee 12, Wisconsin.

DAVID WHITE COMPANY

We offer the most expert REPAIR SERVICE on all makes, all types of instruments.

*Price subject to change without notice.

7292

the heavy timber. The Delta demonstrator quickly took a short length of 2x12, set two levers and made a cut. He then just as quickly set two more and made the second cut, using the center pivot and without moving the stock. "Seeing is believing", was the carpenter's only comment as he walked away, grinning.

New Skid-Shovel Slides Along the Ground

DIGGING Bucket bites with crowding action. With weight on ground, tractor rides evenly with all grousers digging in for full push and bite.

A SKID-SHOVEL is just what its name implies. It's a shovel made by Drott Manufacturing Corp., of Milwaukee, that mounts on front of an International tractor and is skidded along the ground during travel, instead of being carried aloft. Three bucket sizes are available: 1¼-, 2- and 3-yd capacity for use with TD-9, TD-14A or TD-18A International tractors.

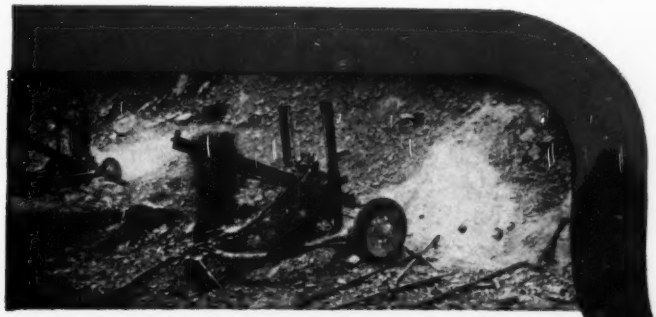
Test models have been operated for a year and a half in all sorts of weather under tough digging conditions, and now the bugs have been ironed out and the Skid-Shovel is making its debut. The bucket bites with a crowding action and tips its load back to the radiator guard before it's lifted from the cut.

Loader shoes rest on the ground during this tipping action, so that none of the powerful prying force is absorbed by the machine. This force reaches 12,000 lb on the TD-9; and 20,000 and 27,000 lb, respectively, on the TD-14A and TD-18A. Break-out action prevents the extra yardage thus gained from slipping out of the bucket.

TIPPING Break-out action tips bucket for full load.

There are three major advantages in skidding a load: First of all, it saves wear and tear on the tractor and eliminates carry strain. Even on rough terrain the load can be easily and safely skidded. Second, the unit is in perfect balance while skidding; with the load rest-

(Continued on page 155)



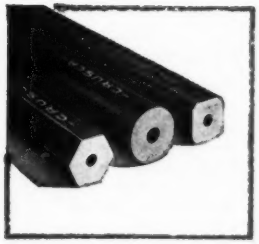
ON TOP

or

UNDERGROUND

it's

CRUCIBLE
HOLLOW
DRILL STEEL
all the way



Whether driving a tunnel or clearing a mountain pass — tough Crucible Hollow Drill Steel gets the job done better, faster — at lower cost per foot drilled. This quality steel is built to take the punishment of around-the-clock operation of modern, high air-pressure rock drills. And you have the assurance of minimum breakage . . . and an end to expensive bit loss.

That's because of Crucible's rigid *pre-testing* of every *lot* of Crucible Hollow Drill Steel. What's more, Crucible Hollow Drill Steel is backed by the experience of quality steelmakers. Then too, field metallurgists with broad background on *your* job are available — should you need them.

Insure the quality of your job — cut costs — use Crucible Hollow Drill Steel.

CRUCIBLE first name in special purpose steels

52 years of Fine steelmaking **HOLLOW DRILL STEEL**

CRUCIBLE STEEL COMPANY OF AMERICA, GENERAL SALES OFFICES OLIVER BUILDING, PITTSBURGH, PA.

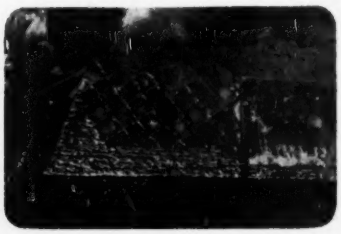
REX HIGH SPEED • TOOL • STAINLESS • ALLOY • MACHINERY • SPECIAL PURPOSE STEELS

STOODY HARD-FACING

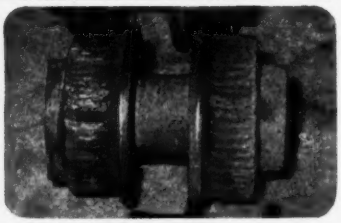
Outwears today's finest alloy steels!

Even though equipment manufacturers select the best available alloy steel to build each tractor part, abrasion and impact ultimately destroy its usefulness. But this doesn't mean worn parts are discarded. Hard-faced with Stoody Alloys, reclaimed parts become *better* than ever. Why? Because wear resistance of properly applied Stoody Alloys is actually superior to the best of alloy steels. *More wear resistance means longer part life, fewer replacements, less downtime and lower operating costs!*

STOODY ALLOYS are the ideal maintenance tool for prolonging equipment life and reducing costs. Ask your Stoody Dealer for application information today! Look him up in the "yellow pages" of your phone book.

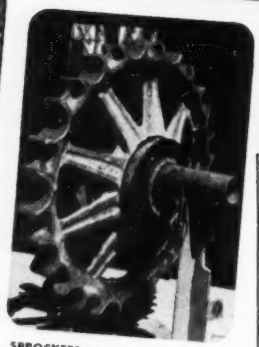


END BLADES on this bulldozer stay square, retain full blade load when protected with Stoody Self-Hardening 21. Note the cross pattern of stringers which packs a cushion of earth, saving hard-metal.

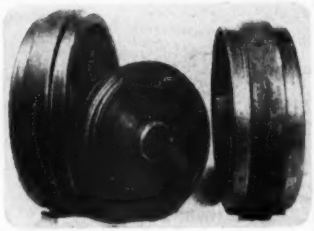


TOP CARRIER ROLLS keep spinning because Stoody 1027 keeps them round.

TRACK ROLLERS are ideal for automatic hard-facing. Stoody 105 doubles wear resistance, squares up cupped surfaces, reclaims rollers better than new.



SPROCKETS manually hard-faced with Stoody Self-Hardening or Stoody 1027 not only last longer but reduce bushing wear.



IDLERS are restored with Stoody 105, applied automatically, for 2 to 1 life increase. Note smoothness of deposit.

AUTOMATIC HARD-FACING

With Automatic Hard-Facing now available in nearby job shops, cost reaches a new low, quality is excellent. Ask for recommendations and list of local job shops—Your Stoody dealer, listed in the Telephone Directory "Yellow Pages", will help you—or write direct.

STOODY COMPANY

SKID-SHOVEL . . . Continued from page 152

SKIDDING on shoes, the load is easily jockeyed around with no transportation strain. Tractor still rides with weight spread evenly on crawlers.

LIFTING higher and pitching farther than any comparative loader, Skid-Shovel can relocate or stockpile material, load trucks, charge hoppers, etc.

ing on the ground, every crawler grouser has an equal chance to dig in for traction. Finally, the operator has excellent 360-deg vision while traveling.

The new rig has higher lift and farther pitch than loaders in the same capacity range, reaching heights of 11, 12 and 13 ft, respectively, on the three models of IH tractor. Action of the bucket control cylinders has been reversed—to provide power for digging and speed for dumping.

A depth-gage indicator is located on the bucket-control ram, enabling the operator to adjust his cutting depths to a fraction of an inch. The Skid-Shovel's hydraulic system is spring loaded. A pressure line running from the main lift rams to a Hydro-Spring puts the system under spring tension. Tried and tested on other Drott equipment, it acts as a shock absorber and, in tests, has reduced shocks and jolts from 3,000-lb hydraulic pressure to 850. There are no hose lines or pipes around the operator; instead all hydraulics are enclosed and protected.

The rear end of a tractor is left free for winch installations and the like. Low over-all clearance height permits work in confined areas. The Skid-Shovel is mounted on the tractor's track frame, so a modified tractor isn't needed. What is necessary, however, is a long, rigid track-frame assembly and large diameter front idlers. Production of another Drott bucket for the International TD-6 is scheduled for the fall.

The same fine enginairing that provides pneumatic controls for THIS cab . . .

provides your controls for THIS crane

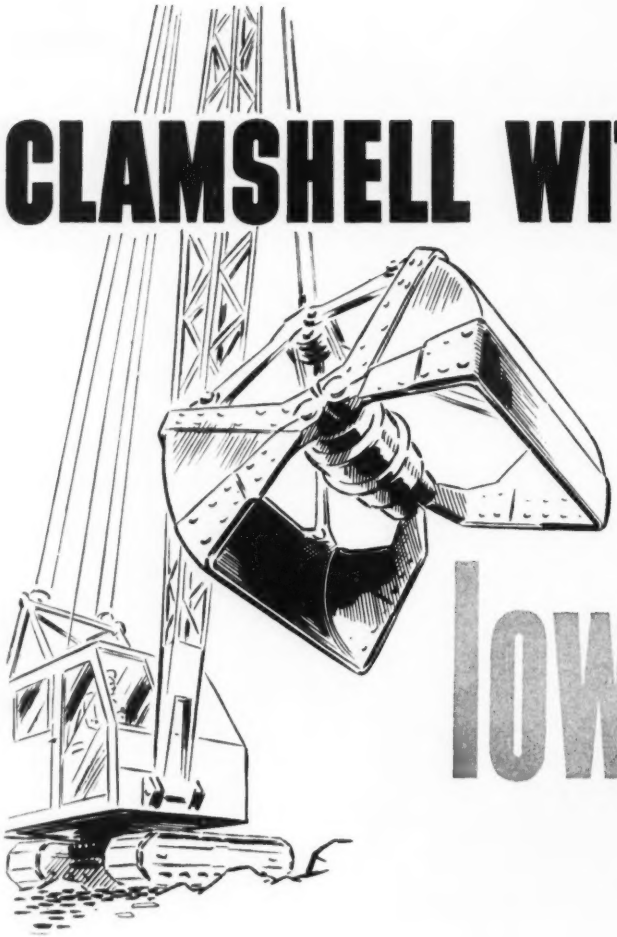
You know the standards of dependability, precision, and instant response that has to be met by pneumatic control equipment for Diesel locomotives. You get these same qualities when you get WAB Controls for your crane, shovel or drag line—because Westinghouse Air Brake Company makes 'em both. This brings a valuable "plus" in performance, life and service.

LOOK FOR THIS MARK FOR DEPENDABILITY

WESTINGHOUSE AIR BRAKE COMPANY WILMERDING, PENNA.

INDUSTRIAL PRODUCTS DIVISION

CLAMSHELL WITH stiff lower lips



Rock-picking packs a tough wallop for a pair of bucket lips. Whether the load is sludge or tight-grained granite, abrasion alone is enough to wear thin the toughest steel . . .

. . . But — when you throw in the almost continuous impact when the clam is in the hands of a high-grade operator — bucket lips are sure to curl back and quit . . .

. . . Unless you have taken the precaution to protect the life of your buckets — up to twice as long as the unprotected type — with one of the many Airco Hardfacing Alloys available to extend the life of all your equipment.

'Face' it. There are more than twenty Airco Hardfacing Alloys for you to choose from. Any Airco representative will be glad to give you complete information. Contact your nearest Airco Office today.

AT THE FRONTIERS OF PROGRESS YOU'LL FIND AN AIR REDUCTION PRODUCT

AIRCO®

DEALERS AND OFFICES IN PRINCIPAL CITIES

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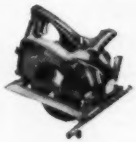
REPRESENTED INTERNATIONALLY BY AIRCO COMPANY INTERNATIONAL

DIVISIONS OF AIR REDUCTION COMPANY, INCORPORATED

TREMENDOUS POWER FOR FAST CUTTING

More work for your money! Thor electric saws are outstandingly the most powerful saws on the market today!



DIRECT GEAR DRIVE FOR EFFICIENCY

No power-wasting worm gears . . . direct-gear drive delivers 25% more power to the blade!

LONG SHAFT BLADE MOUNT FOR ACCURACY

Blade shaft runs full width of tool, ball-bearing supported at each end for life-time alignment.

100% SAFE FROM SWITCH TO BLADE

Switch-lock prevents accidental starting. Telescoping guard covers blade instantly when with drawn from work.

BALL BEARINGS THROUGHOUT

BALANCED FOR EASY SAWING

Natural saw-grip handle behind the center of gravity for fast, sawing, sure and safe control.

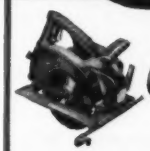
EXTRA WIDE SAFETY BASE

Blade on the right, weight of the tool ON THE WORK . . . far safer, faster by far, even for inexperienced help.

FINGER TIP CONTROL

No wrenches needed for depth and bevel adjustments. Extra-deep cuts, size for size, from 0° to 45°

SAWDUST BLOWER KEEPS LINE CLEAR



EASY BLADE CHANGE

Change blades in 5 seconds! Makes it easy to use the RIGHT BLADE for every job.

COMPLETE SIZE RANGE

And priced right, too . . . from the economical $65.00 6" model to the giant 12" blade size. ALL BUILT TO HIGHEST THOR TOOL QUALITY.

No Wonder More and More Carpenters are Saying:

I'll Take Thor

Independent Pneumatic Tool Company, Aurora, Illinois

MANUFACTURERS OF THOR SILVER LINE ELECTRIC SAWS

"EYE" BEFORE YOU BUY AND YOU'LL CHOOSE A ROGERS

TRAILER SPECIFICATIONS

FEATURES OF CONSTRUCTION

Compare Rogers trailer specifications with others and study Rogers special features of construction. You're certain to be impressed.

Much equipment included [illegible] Rogers trailers is considered extra in [illegible] to yourself, consider every de[illegible] the trailer you buy [illegible]u'll choose a ROGERS.

To the best of our knowledge, only Rogers uses alloy steel in the main supporting members of the frame. This is your insurance against the possibility of [illegible] overloading damage. Write for the Catalog.

YOU GET MORE FOR YOUR MONEY in a ROGERS TRAILER

EXPERIENCE builds 'em

ROGERS

PERFORMANCE sells 'em

ROGERS BROS. CORP.

ALBION, PENNA.

220 ORCHARD STREET

Also of timely interest is this ROGERS Tag-A-Long trailer which makes a dump truck serve as a tractor and effects sizeable savings for contractors.

Driving Haul Units

SAFE PRACTICES must be emphasized regularly on a construction job to make even the best program remain effective. A good example is the way Lytle-Amis-San Ore worked it last year on the Cedar Bluff Dam in Kansas to promote safety in the operation of heavy hauling equipment. Shift superintendents held safety meetings once each week. These driving precautions were emphasized:

1. Drivers were warned regarding speeding on haul roads, whether in the regular production line or during lunch time or at quitting time.

2. Passing on haul roads was prohibited.

3. Drivers were cautioned to see that all dirt was dumped on the fill before going back to the pit on the return haul road, so that road hazards due to loose dirt dropped by the trucks on the return ramp would be minimized.

4. Cautions to drivers reporting to work without sufficient rest; employees were directed to park equipment, rather than drive when they left drowsy or sleepy.

5. Discussed stalling of equipment on haul ramp leading to fill. Drivers were instructed to promptly dump the load if the vehicle stalls to avoid reverse jack-knifing, and set the brakes to prevent the vehicle from rolling.

6. Cautions regarding haul roads that are watered between shifts. The first round at start of shift should be made slowly and with extra precautions, until slick spots are dried out.

7. "Ramming" of other equipment on material fill, road, or in the pit is prohibited. Aside from the accident hazard, it causes unnecessary damage to equipment.

8. Dumpers were warned about walking backwards when directing the dumping of the trucks. Dumpers also were warned not to sit down on a windrow while waiting for haul units.

9. All pushing of dump trucks on windrow to be done by tractors rather than by other dump trucks. Tractor operators were instructed to push on low corner equipment rather than high side, to avoid upsets.

just a TWIST of the wrist!

. . . That's about all it takes to restore new pump efficiency to Rex® Centrifugal Self-Priming Pumps even after many, many hours of rugged service. In every self-priming centrifugal pump, the air peeler is the most important single factor in priming efficiency. Rex is the only pump with an *adjustable* air peeler.

HERE'S HOW SIMPLE IT IS! Just remove cover plate . . . remove one bolt . . . drop peeler to just clear impeller . . . tighten the setscrew . . . replace the cover plate . . . and you've restored original priming efficiency.

There are only 6 basic parts to a Rex Pump (see illustration) . . . all readily accessible for quick, easy maintenance and replacement.

This simplicity means *longer pump life . . . sustained efficiency* and, above all, more *economical operation*—with Rex there's less chance for trouble . . . far lower maintenance costs . . . more gallons of water pumped per dollar of fuel and per dollar of cost.

See the new Rex line of Self-Priming Centrifugal Pumps at your nearest Rex Distributor, or write for Bulletin 51-37, which contains the complete story. Chain Belt Company, 4664 W. Greenfield Ave. Milwaukee 1, Wis.

CHAIN BELT REX COMPANY ®

CONSTRUCTION MACHINERY . . .

Allis-Chalmers AD-40

FIRST WITH BUILT-IN

You will do more and better work, do it easily and safely with the new Allis-Chalmers AD-40 motor grader. One big reason is the new built-in hydraulic power steering system—another Allis-Chalmers first in the motor grader field. The AD-40 is specifically *designed* to use this advanced system which retains the accuracy and roadability of mechanical steering . . . and adds the ease and smoothness of hydraulic steering. What's more, the hydraulic power steering unit is *inside* the head casting, with a short shaft to eliminate "spongy" steering. And hydraulic lines are enclosed in the frame . . . fully protected from external damage. See what HYDRAGUIDE®, the outstanding new power steering system, does for you on these jobs . . .

ditching is fast, accurate, complete. Hydraulic power goes to work for you the instant you start to turn . . . does most of the steering work for you. As a result you can turn far easier, far faster . . . work right up to culverts, poles or other obstructions before turning out.

plowing snow — always a tough job due to added front-end weight of either blade or rotary unit—becomes much simpler . . . much more accurate when hydraulic power steering goes to work for you.

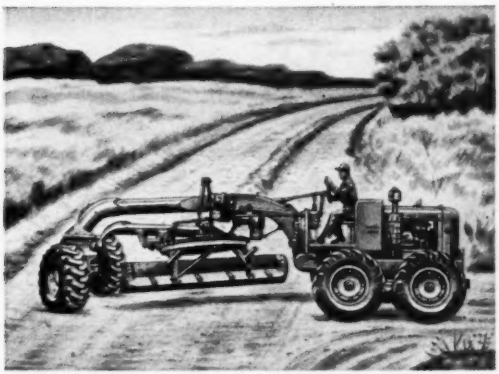
muck, sand, soft ditches are back-breakers no longer. Thanks to power steering, you pilot the wheel rather than wrestle it. Because of it, you can blade and turn at the same time.

See your Allis-Chalmers dealer for the full story

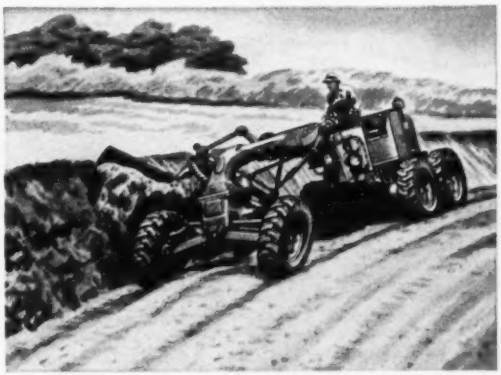
the Newest, Finest line on Earth . .

MOTOR GRADERS

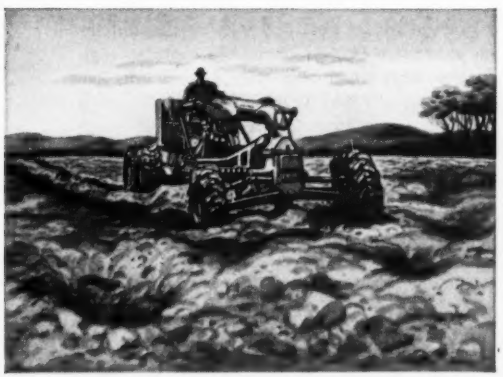
A NEW KIND OF POWER STEERING



turning around is quick, easy, safe. With built-in power steering you can turn with just one finger—even while stopped. Fast, precise control greatly cuts down interference with moving traffic . . . gives you safe command even on dangerous mountain turns.



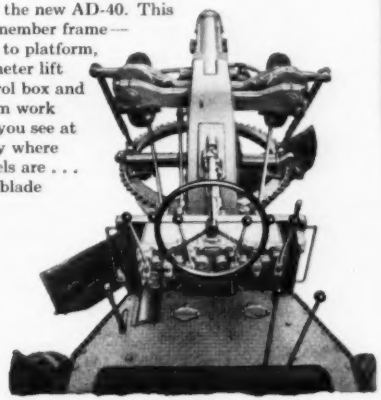
bank sloping is easier with the AD-40. Power steering gets you into position fast . . . lets you operate on steep slopes without the tiring "wheel fight" you've always known before. In addition, ease of control assures a smooth, even grade on every job.



holes and bumps cause no "wheel kick" because this new system cushions shock . . . keeps jolted front wheels from "steering back" at you. You turn only when you want to turn.

you get full visibility, too!

Here's the view you have from the platform of the new AD-40. This grader's single-member frame—from front axle to platform, its smaller diameter lift cases, low control box and tapered platform work together to let you see at all times exactly where your front wheels are . . . just what your blade is doing.

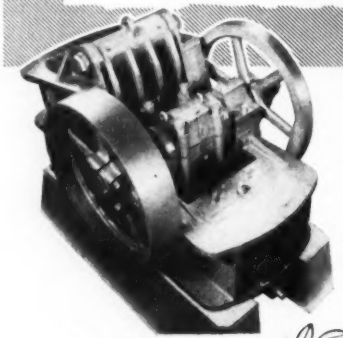


ALLIS-CHALMERS

TRACTOR DIVISION — MILWAUKEE 1, U. S. A.

This ancient hoist . . .

was as inefficient as the crushing method used by the man in the background. But it was considered a great improvement in 1565.



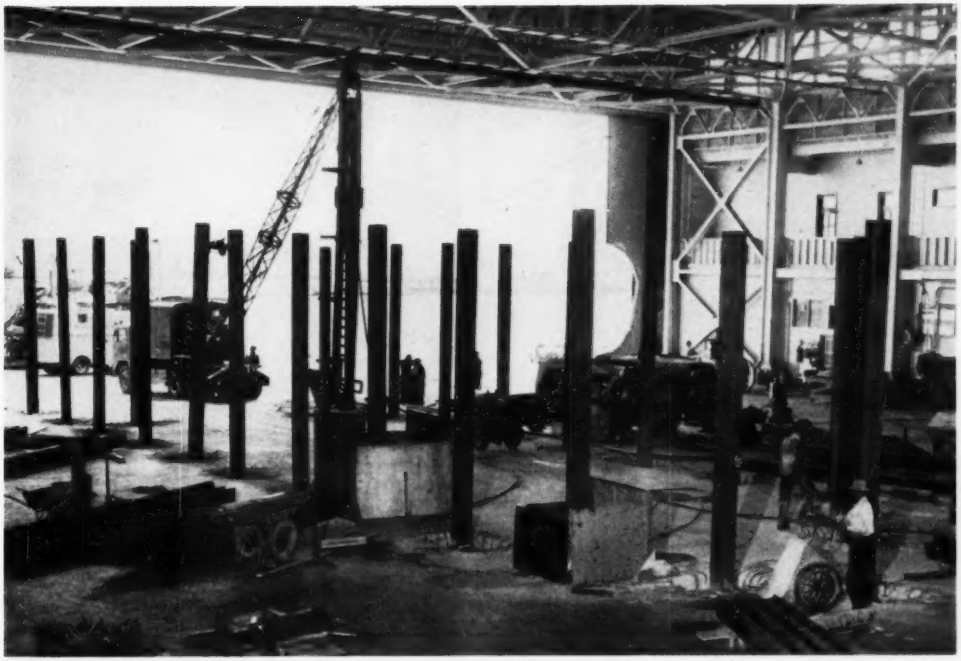
Every century is marked for its notable achievements and the 20th century is no exception. Our Machine Age contains engineering and production feats which men only a short time ago considered impossible. For 50 years, Traylor has contributed its share in this development by advancing new and better stone crushing machinery for the construction industry. Construction men know that it takes experience to solve the wide variety of problems in the production of aggregate. Traylor has experience . . . half a century of it.

Traylor Type H and HB Jaw Crushers require less power per ton of rock crushed than any other jaw crusher, size for size. Ask for Bulletin 4105 for complete details.

OUR GOLDEN ANNIVERSARY YEAR
1902 1952

TRAYLOR ENGINEERING & MANUFACTURING CO.
477 MILL ST., ALLENTOWN, PA.
SALES OFFICES: New York, Chicago, Los Angeles, San Francisco
Canadian Mfr.: Canadian Vickers, Ltd., Montreal, P. Q.

a **Traylor** *leads to greater profits*



ROWS OF PILES in place ready for the pile driver to put them down inside an aircraft hangar in San Francisco. Steel H-piles were driven in 20-ft lengths, new sections welded on when top of driven pile approached the level of the floor.

Piles Driven in Sections Salvage Hangar Floor

BENDING BACK reinforcing steel in existing concrete floor to make room for the new piles and pile caps. Openings cut are 3x5 ft; floor patch is poured with pile cap.

HOW DO YOU DRIVE steel H-piles 65 to 116 ft long into a floor that needs reinforcing when the ceiling of the structure is only 34 ft high?

There's nothing to it. Simply drive the piles in 20-ft sections, welding on new sections as the top of a section nears floor level.

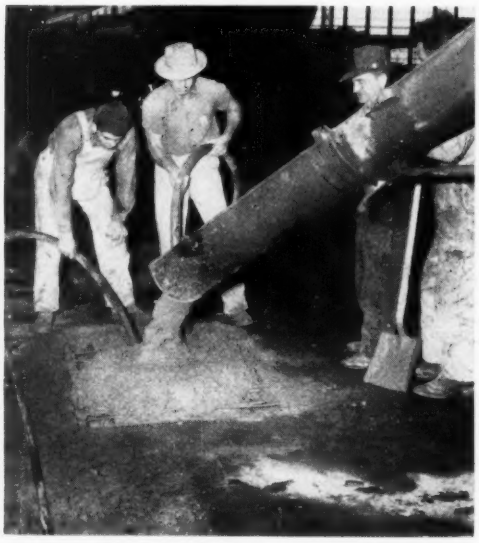
Pan American World Airways made plans to do maintenance work on its huge Boeing Stratocruisers, six at a time, in an existing 320x250-ft hangar at San Francisco International Airport. Wisely, it was decided to investigate the hangar floor that would have to support some 435 tons of airplanes.

Studies showed that fill under the hangar had settled from 6 in. to 2½ ft, and that the settling action had pulled pilings away from pile caps under an extensive area.

Only the bays where the planes would be parked were reinforced —with the exception of one 50x70-ft area where all pilings had separated from the floor, leaving it

PILEHAMMER CLOSE-UP showing the lead and Vulcan No. 1 hammer used on the close-quarter job. Truck crane could be brought directly into the hangar over the existing floor.

STEEL PLATE JIG holds two pile sections in alignment for welding. Note the steel bar handles welded to the jig-plate retaining nuts for quick installation and disassembly without tools.



CONCRETE IS CHUTED into floor holes over piles after bars had been bent back into place and special reinforcing added for the pile cap. Special attention was given to vibrating.

suspended from bar reinforcing.

Ben C. Gerwick, Inc., San Francisco, drove the piles, using a truck crane, hanging leads and a No. 1 Vulcan hammer. The 10-in., 49-lb H-piles were driven until resistance was equal to a 40-ton load.

Greatest depth was 116 ft, but most of the 86 piles driven stopped at 65 ft. They were placed at 10-ft intervals between the old piles through 3x5-ft openings cut into the concrete floor.

A heavily reinforced pile cap was used, each projecting at least 6 in. underneath the floor beyond the 3x5-ft cutouts. Floor patches were poured as integral parts of the pile cap. A special steel-plate jig was devised to hold the H-piles in alignment for welding. The jig, with cutouts for welding, was bolted around the joint.

Earl & Wright, San Francisco, were consulting engineers. W. R. Grace supervised the work for Pan American.

digging ditches TO BLUEPRINT SPECIFICATIONS

Using special bucket built by owner, Gradall digs and trims irrigation ditch, eliminating hand finishing.

Along busy highway, Gradall accurately cleans slope, digs ditch, and loads spoil, all in one operation.

Gradall digs two-level ditch – tilting arm-action boom permits chamfering slope to desired angle.

NO MATTER WHAT TYPE DITCH IT IS, the Gradall will dig it with the accuracy of hand labor—but at much less cost!

Gradall has proved itself a time and labor saver on many different types of ditching jobs—following the special contours of ditches along railroad right-of-ways, along highways, in extensive irrigation projects—anywhere precision work is required.

By power hydraulics, the Gradall exerts a positive down pressure, rather than depending upon the weight of the bucket for its cutting action. And its "arm-action" boom twists and turns to cut slopes at any desired angle —to work easily around obstacles. Its mount permits a 360° swing to load or waste spoil. And many standard and special tools can be easily interchanged in a matter of minutes.

Contractors, officials of utilities and municipalities, and highway men alike are enthusiastic over Gradall's clean, finished work—done exactly to "specs". But see for yourself—Contact your Gradall Distributor for a field demonstration.

Gradall®
DIVISION OF WARNER & SWASEY Cleveland

Gradall Distributors in over 60 principal cities in the United States and Canada

GRADALL—THE MULTI-PURPOSE CONSTRUCTION MACHINE *with Controlled Down Pressure*

Texas construction firm by setting

New 18-story office building for the Prudential Insurance Company of America, where Straus-Frank Co. used Remington Stud Drivers for fastening air ducts to concrete ceilings.

It's fast, easy and safe to operate the Remington Stud Driver

Simply hand-assemble stud and power cartridge, load as a unit in easy-to-open Remington Stud Driver, and close.

Press loaded Stud Driver firmly against surface, depress safety lever and pull trigger. Explosive charge imbeds stud solidly.

LOOK AT ALL THESE FEATURES

COMPACT AND PORTABLE — Weighs only 5½ pounds, ideal for overhead work in inaccessible places.

SPEED — One man can set as high as 5 studs per minute on repetitive work at depths up to 2¾ inches, depending on material.

ELIMINATES INVESTMENT in outside power — completely self-powered.

FOUR WAYS SAFE — Plainly visible red dot indicator shows when Stud Driver is cocked; safety lever must be depressed before and during squeezing of main trigger; permanently attached safety shield must be compressed against work before Stud Driver will operate. If tilted at more than a slight angle, Stud Driver will not fire. Slight recoil. Low noise level.

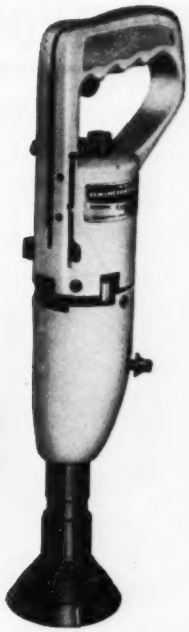
RUGGED — All working parts of the Stud Driver are made of selected steels, cased in a strong aluminum-alloy housing. Lining of safety shield is a solid block of tough, resilient Du Pont neoprene.

PRICE for Model 450 Remington Stud Driver, complete in rugged steel carrying case — only $119.50.

saves over $8,000 fastening studs with

NEW Cartridge-Powered Model 450

REMINGTON STUD DRIVER



Revolutionary new tool sets studs in seconds... and does it safely!

Construction job speeded at a substantial reduction in labor costs! That's the report from Straus-Frank Co., Houston, Texas, whose contract division used Remington Stud Drivers on a recent building project. In setting fastening studs for overhead air ducts, the Stud Drivers outproduced older methods eight to one . . . averaged 50 studs per hour, *including down time!*

Completely self-powered, the Remington Stud Driver needs no outside power source or extra equipment. The hinged construction of this lightweight fastening tool permits easy one-step loading—without the time loss of handling separate parts. Workmen like the Stud Driver's simple operation and safety features . . . Contractors like its lightning speed in firmly fastening steel or wood sections to concrete or steel. Studs have pull-out resistance as high as two tons!

The Model 450 Remington Stud Driver is made by Remington Arms Company, Inc., *America's oldest and foremost sporting arms manufacturer.* To obtain detailed information on this time- and money-saving tool, and for the name of your nearest distributor, mail the coupon below.

Speed all these jobs... with Remington studs designed for the job!

1. Fastening electrical fittings to concrete, steel and brick.
2. Hanging steel sash to concrete and brick.
3. Anchoring stadium and theatre seats to concrete.
4. Fastening wood to steel.
5. Anchoring wood plates to concrete floors and ceilings.
6. Hanging steel radiator housings to concrete or brick.

Only Remington studs are identified by this large trademark on the head.

"If It's Remington—It's Right!"

Remington

DUPONT

Remington Arms Company, Inc.
Industrial Sales Division, Dept. CE
939 Barnum Ave., Bridgeport 2, Connecticut

I am interested in obtaining detailed information on the Model 450 Remington Stud Driver.

*Name*_____

*Firm*_____

*Position*_____

*Address*_____

*City*_____ *State*_____

CONSTRUCTION EQUIPMENT NEWS . . *A Preview of*

JAMES M. CONNOLLY, Equipment Editor

BORING AND BELLING OUT OF CAISSONS WITH FOUNDATION BORER

Here hard at work in Detroit at new Chrysler jet engine plant is the Gar Wood foundation borer which excavates and bells out in one operation, leaving unreinforced footings ready for concrete pours. No workmen need go "down in the hole," and a great deal of carpentry and reinforced steelwork is eliminated. Foundation subcontractor is Sugden & Sivier of Detroit, who report as many as 26 footings sunk per day on several jobs in the Detroit area with one operator and one laborer at about half usual cost.—**Gar Wood Industries, Inc., Wayne, Mich.**

JOB - TESTED CLAY DIGGER

This clay digger, Thor No. 16, incorporated demands and suggestions of tunneling contractors who tried and tested it for three years. Users can have inside or outside trigger, closed and latch retainers, 5 chuck sizes. —**Independent Pneumatic Tool Co., Aurora, Ill.**

VERTICAL-BOOM RUNABOUT DITCHER IS HYDRAULICALLY DRIVEN

This Runabout ditcher has "Hydracrowd" hydraulic transmission, the levers of which work is somewhat the same fashion as a faucet, thus allowing an infinite number of speeds for bucket line, reversible belt and forward motion, each independent of the others. An overload release sprocket trips when severe obstructions are encountered and automatically resets itself when cleared. When it meets such an obstruction, the hydraulic reverse lever may be pulled, and the rig will back away at top speed. Operator may sit, as shown here, or may operate the machine while standing alongside. It has a two-man cab with all conventional automobile controls and accessories. Road speeds go to 16 mph.—**Barber Greene Co., Aurora, Ill.**

STOCKPILE-WINDROW LOADER

The rig that's making short work of loading berm has a full-floating feeder, suspended from two coil springs and a pivot, that allows the paddle blades to flat over the contours of a windrow. An auger gather-feeder speeds loading. Spiral blades, extending to the gather's moldboard, feed in a steady flow.—**Athey Products Corp., 5631 W. 65th St., Chicago, Ill.**

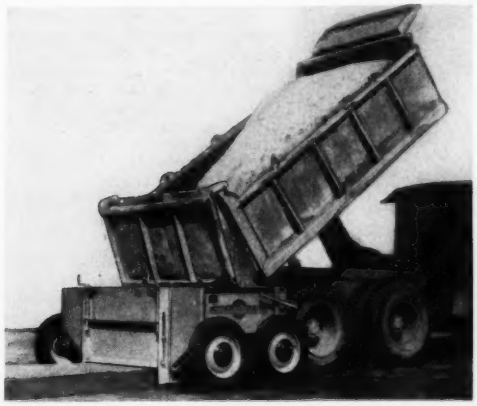
New Machinery, Tools and Equipment That Will Help You on the Job

NEW REX ADJUSTA-WATE MIXERS CARRY TOP LEGAL PAYLOAD

Knowing that most valuable legal payload space on a mixer is right behind the cab, Rex engineers designed their new 5½- and 7-yd with the drum in that space and moved th drum motor to the rear. New "flip-flop" charging hopper allows optional loading through rear end, or drum hatch; then, with a flip, it gives sealed-end mixing; it also lifts clear for full-end opening and speedier, fuller discharge when needed, and for easy cleaning. Water for mix enters from a tank up front through drum bearings.—**Chain Belt Co., Milwaukee, Wis.**

TRACTOR OPERATES DITCHER

Operated by direct drive from a tractor power take-off, this trailer-mounted ditcher digs in widths from 10 to 14 in., depths to 6 ft. Called the POW-R-DITCHER, it's been used for tiling, laying pipe and trenching for wall foundations.—**Vermeer Mfg. Co., Pella, Iowa.**



SPREADER BOX MEASURES DUMPED MATERIALS

Stabilized base, roadmix and hotplant materials are measured as they are passed out into windrows through this Wood spreader box. The four-wheel unit attaches directly to a dump truck and measures the material as it and the truck move along. Gate is adjustable through a screw-lift and windrows up to 8 cu ft are controlled. Meeting the growing trend on the part of engineers designing roads and airports to specify that select or imported materials be measured, the box eliminates guesswork and is available from **Wood Mfg. Co., 6900 Tujunga Ave., N. Hollywood, Calif.**

HYDRA-LIFT FITS ANY TRUCK 1½ TONS OR UP

Late in 1950 the original Hydra-Lift appeared—a versatile, inexpensive crane built to fit on a truck chassis. The new improvement on the original—Model B—features a variety of improvements. Chief among these are (1) an increase in the unit's safety margin, and (2) the fact that it's now shipped almost completely assembled. Requiring only 40 in. behind the truck cab, its boom swings through 180 deg, lifts through an arc of 100 deg and telescopes from 12 to 17 to 22 ft. Simple lever con-

(Continued on next page)

Am I Glad We Have STERLINGS!

At a time when wheelbarrows are scarce, it certainly feels good to have a supply of sturdy Sterling Barrows on hand. Sterlings are so ruggedly constructed, they seem to last forever. In the present emergency, many Sterlings are working overtime, taking hard punishment and coming back for more . . . again proving . . . IT PAYS TO BUY THE BEST.

(Above) Model D3½S Maximum Capacity 3½ cu. ft. 16 gauge tray, all welded, no rivets, double lapped at corners. Steel channel legs. V-shaped front braces and brace support.

(Right) Model CSW Maximum Capacity 5 cu. ft. 16 gauge tray, all welded, no rivets, double lapped at corners. Heavy-duty malleable wheel guard.

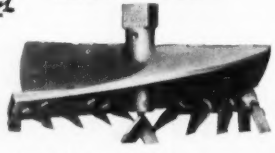
STERLING WHEELBARROW CO., Milwaukee 14, Wis.

Look for this Mark of STERLING Quality

Sterling WHEELBARROWS

THESE PENGO PRODUCTS SAVE YOU MONEY!

THE PENGO EARTH AUGER



★ Twin helix—no back thrust!

★ Bores true, clean holes in any soil, most sandstones and hardpans, frozen ground, permafrost!

★ All wearing parts replaceable on job!

★ Made in 15 sizes, 10" to 54" hole diameters, to fit all makes of heavy-duty earth boring machines. Larger sizes on order.

THE PENGO CUTTING HEAD

★ Easy installation—welds to your present helix.

★ Bores where you never could before!

★ Wearing parts are replaceable on the job and are interchangeable with PENGO Auger parts. *(Described at left.)*

★ Made in 9 sizes, 8" to 24" diameters. Larger sizes on order.

THE PENGO WISDOM TOOTH

★ All PENGO Augers and Cutting Heads are equipped with the drive-on PENGO Wisdom Tooth, specially designed for use on earth augers; cast from special abrasion and shock-resistant steel alloy for *far* longer service life!

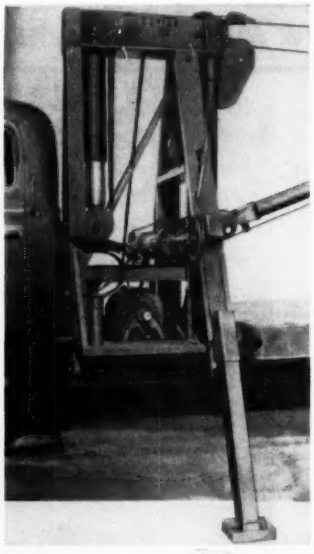
"Get the PENGO WISDOM TOOTH—It knows how to bore holes!"

ORDER TODAY—OR SEND FOR LITERATURE, PRICES

PETERSEN ENGINEERING CO.

MANUFACTURERS

SANTA CLARA, CALIFORNIA



trols can be installed inside the cab or outside. The truck motor is the basic source of power, which is transferred to a power take-off and through two underdrive connections to a hydraulic pump and a winch. This pump supplied two hydraulic cylinders; one is vertical, single-acting, and actuates a cable to raise or lower the boom; the second is horizontal, double-acting, to swing the boom. The winch powers the cable that raises and lowers the load. For maximum capacity loads the winch must be used, although on lighter jobs movement may be forced by booming up or extending with the load line held fast. The hydraulic pump is Vickers, vane-type, delivering 7½ gpm at 1,500 psi. In case of engine failure and resultant stopping of pump pressure, the boom locks and cannot be lowered or swung.—**Pitman Mfg. Co., 300 W. 79th Terrace, Kansas City 5, Mo.**

MIXER WITH TRUCK ENGINE DRIVE—This manufacturer has just brought out a transit mixer equipped with truck engine drive. Elimination of the mixer engine reduces dead weight by about 1,300 lb and makes for bigger payloads without exceeding highway weight limits. Over-all length is reduced approximately 19 in., solving an important weight distribution problem. Considerable weight is shifted from the rear to front axle enabling operators to meet stringent rear-axle load restrictions. One engine in place of the conventional two also means less fuel consumption and reduced maintenance. The truck engine drive is available in 4½-, 5½- and 6½-yd sizes.—**The T. L. Smith Co., Milwaukee 45, Wis.**

9 YEARS OF PUMPING FOR A.G.&E. 1944-1952

To help meet the nation's need for power, the companies in the American Gas and Electric System are engaged in a vast expansion program.

On deep power plant foundations, pumping is usually Problem #1. How does A. G. & E. meet it? With MORETRENCH WELLPOINT SYSTEMS!

They worked "in the dry"

— in OHIO on the Muskingum River Plant and the Tidd Power Plant

— in INDIANA on the Tanners Creek Plant and the Twin Branch Plant

— in WEST VIRGINIA on the Kanawha River Plant and the Philip Sporn Plant.

They know from experience, that for fast, efficient, economical dewatering, Moretrench is the answer.

It's YOUR answer too, if there's water on your job. Write, wire, phone our nearest office for an estimate.

MORETRENCH CORPORATION

90 West St. New York 6 | 4900 S. Austin Ave. Chicago 38, Illinois | 7701 Interbay Blvd. Tampa 9, Florida | 315 W. 25th St. Houston 8, Texas | Rockaway, New Jersey

Canadian Representative: Geo. W. CROTHERS Limited, Toronto, Ontario

CHEVROLET Advance-Design TRUCKS

Buy on these plain, hard FACTS!

CHEVROLET first in demand in value in sales

Fact No. 1

COSTS LESS TO BUY

Payload pound for payload pound, a Chevrolet truck *lists for less* than any other truck with the qualifications to handle your job. As the world's largest manufacturer of trucks, Chevrolet takes advantage of production economies to pass substantial savings on to you!

Fact No. 2

SAVES MONEY ON THE JOB

Chevrolet trucks save you money over the miles with great proved features that cut costs. Valve-in-Head economy, rugged Hypoid rear axles, extra-sturdy channel-type frames and Flexi-Mounted cabs, Ball-Gear Steering, Synchro-Mesh Transmission.

Fact No. 3

RIGHT TRUCK FOR EVERY LOAD

Your first interest in a truck is: "How well will it do the job?" That's where Chevrolet trucks have it, because they're factory-matched to the payload—tires, axles, frame, springs, engine, transmission, brakes. You get as much truck as your job calls for.

Fact No. 4

KEEPS ITS VALUE LONGER

Chevrolet trucks traditionally keep their value longer to bring higher used truck prices, year after year, at trade-in time. That means real, substantial dollar-and-cents savings when you wish to replace your present truck with a new one.

CHEVROLET ADVANCE-DESIGN TRUCK FEATURES

TWO GREAT VALVE-IN-HEAD ENGINES—Loadmaster or the Thriftmaster—to give you greater power per gallon, lower cost per load • POWER-JET CARBURETOR—for smooth, quick acceleration response • DIAPHRAGM SPRING CLUTCH—for easy-action engagement • SYNCHRO-MESH TRANSMISSION—for fast, smooth shifting • HYPOID REAR AXLE—for dependability and long life • TORQUE-ACTION BRAKES—on light-duty models • PROVED DEPENDABLE DOUBLE-ARTICULATED BRAKES—on medium-duty models • TWIN-ACTION REAR BRAKES—on heavy-duty models • DUAL-SHOE PARKING BRAKE—for greater holding ability on heavy-duty models • CAB SEAT—with double-deck springs for complete riding comfort • VENTI-PANES—for improved cab ventilation • WIDE-BASE WHEELS—for increased tire mileage • BALL-TYPE STEERING—for easier handling • UNIT-DESIGNED BODIES—for greater load protection • ADVANCE-DESIGN STYLING—for increased comfort and modern appearance.

CHEVROLET DIVISION OF GENERAL MOTORS, DETROIT 2, MICHIGAN

STRIPPING SHOVEL—Using the same base machine as the standard 2½-yd Model 1005, the Koehring Hi-Lift stripper here has a 50-ft boom and 36-ft dipper stick. With the boom angled at 45 deg, it has a 40-ft dumping height and a 60-ft reach. The manufacturer says that outstanding performance on casting operations has been reported when the unit was using both 2- and 2½-yd dippers, depending on conditions. By comparison, the standard 1005 shovel attachment operated by chain crowd, carries a 26-ft boom and standard 19½-ft double dipper sticks. It can be converted for lift-crane, dragline or clamshell operation. The standard 60-ft boom has a lifting capacity rated at 79½ tons, according to the company, and can be increased to 150 ft, including a 30-ft jib. Normally the stripper has 42-in. shoes and over-all crawler dimensions of 13½ ft and 19 ft, 3 in. for width and length. These compare with standard 30- or 36-in. shovel shoes and an 11-ft, 11½-in.x15½-ft frame. Total weight is approximately 204,000 lb. **—Koehring Co., Milwaukee 16, Wis.**

CONCRETE PATCHING MATERIAL—One of the bugaboos of concrete patching and build-ups is the inability of feathered edges to stand up under traffic. This almost always necessitates deep, butted edges and attendant additional time and effort. Now the manufacturer of a concrete patching material known as RUGGEDWEAR Resurfacer claims that his new product bonds tight and secure to old concrete without chipping, and will hold a feather edge as well. Shown above is a typical installation made with the new surfacer. A ramp was installed—feathered on three sides—leading up to a new level at a factory unloading door. RUGGEDWEAR also can be used as a complete overlay on almost any type of floor. A ½-in. application is sufficient, which will not raise the floor levels appreciably nor interfere with machinery bases or permanent fixtures.—**Flexrock Co., 3667 Cuthbert St., Philadelphia 4, Pa.**

PAVEMENT SURFACING—Colfix jet seal is a blended bituminous base product with selected, bodied fillers that give solvent-resistance to suitably primed pavements. After numerous tests by military agencies, it is reported to give maximum resistance to heat, wear and weather, in addition to its resistance to petroleum solvents. It is free-flowing in consistency for easy cold application by brush or squeegee. A companion product called Colfix Resurfacer (Solvent-Resistant) is for protecting driveways.—**American Bitumuls & Asphalt Co., 200 Bush St., San Francisco, 4, Calif.**

"THAT'S REALLY THE WAY TO HANDLE CONCRETE"

says L. G. (Bud) Waigand, Project Manager, Peter Kiewit Sons Co.

Two men ran this Noble batch plant with 28S Koehring mixer

How would you haul and place 16,000 yards of concrete on a big water reservoir job, with pours scattered all over . . . and with a tight schedule?

Peter Kiewit picked two 3-yard Dumpcretes, mounted on light, short-wheelbase Chevrolet trucks for their U. S. Bureau of Reclamation job near Salt Lake City.

"We liked the Dumpcretes because they're fast," says Mr. Waigand, "and because they place equally well into forms, buckets or collecting hoppers. They're rugged too, and cause little downtime."

For facts on 2, 3, and 4-yard Dumpcretes write today.

MAXON DUMPCRETE

Fastest from plant to pour

Manufacturing Division
MAXON CONSTRUCTION CO., INC.
641 Talbott Bldg., Dayton 2, Ohio

Send the following

☐ "Dumpcrete High-production Method"

☐ "12 Ways to Set Up for Central Mixing"

Name_____

Firm_____

Street_____

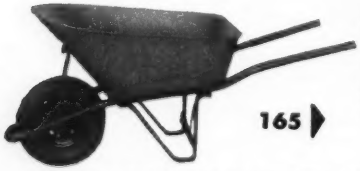
City_____ State_____

Buch CONTRACTORS BARROWS

One of the most popular barrows made by Buch. It has a 4 cu. ft. capacity and is the practical barrow for handling all types of wet or dry loads. Tray is deep-drawn from a single sheet of 15 gauge sheet steel with rolled over edges reinforced by ¼" steel rod. If desired, it may be obtained with prime hardwood handles instead of tubular steel. (154)

◀164

Just about the strongest barrow ever made. Its 5 cu. ft. capacity tray is made of 16 gauge sheet steel, lapped and riveted at corners. Its edges are turned over ¼" steel rod for extra strength. Barrow is 26" wide and all seams are welded. This model, too, is available with wooden handles as well as the tubular ones shown. (155)



165▶

These are just two of the specially designed contractors barrows found in the complete Buch line. Write, today, for our latest catalog which pictures and describes it in full detail.

Carrying the Load Since 1868

BUCH MANUFACTURING COMPANY ELIZABETHTOWN, PENNA.

MECHANICAL PENCIL AND SLIDE RULE — Here's a compact pocket slide rule incorporated into a two-color pencil. Made of plastic and metal, the Devco writing slide rule was sturdily designed to meet the needs of drafting room, school, shop or field, at the same time limiting the plurality of instruments. Only 6½ in. long and weighing less than an ounce, it has a telescoping measuring scale, reading magnifier, depth gage in inches and centimeters, detachable straightedge and a plain and enlarging indicator for the slide rule's A, B, C, D, L, S, T, CM and IN scales. **—The Device Development Co, 226 W. 4th St., New York 14, N. Y.**

EXTRA SAFE SPEEDMATIC SAWS —A high safety factor has been built into an electric saw for contractors, builders, and carpenters in the two new Speedmatic models which feature a kickproof clutch. When the blade binds in a cut or strikes a knot, this kickproof, or friction, clutch allows the motor to turn while the blade remains stationary, eliminating possibility of dangerous kick-back. The clutch protects the operator, prevents damage to the gears and the work and reduces motor burn out. To save time on each job, these Speedmatics are equipped with an instant depth adjustment which can be set accurately in a few seconds. The saw moves up and down on dovetail ways, precision machined to maintain accuracy of cut at any depth. It also is equipped with an improved safety guard covering more blade and tooth area, and designed not to jam with chips or wet sawdust. New kickproof models also retain the right-hand blade so that the saw rests on the main piece rather than the piece to be cut off. Another built-in feature is the instant bevel adjustment which can be set quickly and remains set.**—Porter-Cable Machine Co., Dept. PR-5, Syracuse 8, N. Y.**

UNBREAKABLE FOLDING RULE — Your first glance at this picture will tell you that it's a tape measure wound around the carpenter's hands. Look closely and you'll see that it's not. It's a 6-ft folding rule of hardened, tempered alloy steel that can be bent and twisted—yet it will return to normal shape immediately. Weight is 3 1/5 oz, 20% less than an ordinary wood rule. It can be used to measure pipe circumferences, sheaves, pulleys, etc., and needn't be folded up after each measurement for fear of breakage. Enamel is white and markings are black. The company guarantees to "replace or refund full purchase price if the Durall Folding Rule breaks or if the joint wears loose or proves unsatisfactory . . ." — **Durall Tool Corp., 117 Woodworth Ave., Yonkers, N. Y.**

PLASTIC PIPING—This tough, semiflexible piping, highly resistant to a wide variety of solvents and unaffected by mineral acids, salts and alkalis at temperatures up to 150F, is excellent for sewage and acid drainage use, for fume piping and for corrosives. Its fine dielectric properties fit it for use as a conduit. Known as Cyclothene, it's furnished in stock lengths of 25 ft in 4-in. or larger pipe, 150-ft coils for 3-in. pipe, 250-ft coils for 2-in. pipe and up to 400 ft in smaller sizes. Its semiflexible construction permits it to follow surface contours. A hack saw and screwdriver are the tools used for installation. It is connected readily with knurled and insert connectors clamped with stainless steel bands. A standard pipe thread adapter also is available where connection to other equipment is desired. Cyclothene can be furnished with welded-on flanges in specific lengths and ells, tees and Ys can be fabricated, as needed.—**Munray Products, Inc., 12400 Crossburn Ave., Cleveland 11, Ohio**

Here's one contractor who did! As an example of the advantages inherent in MICHIGAN Truck Cranes, Mr. Gurtzweiler of Henry Gurtzweiler, Inc., Toledo, cited a competitive-bid job.

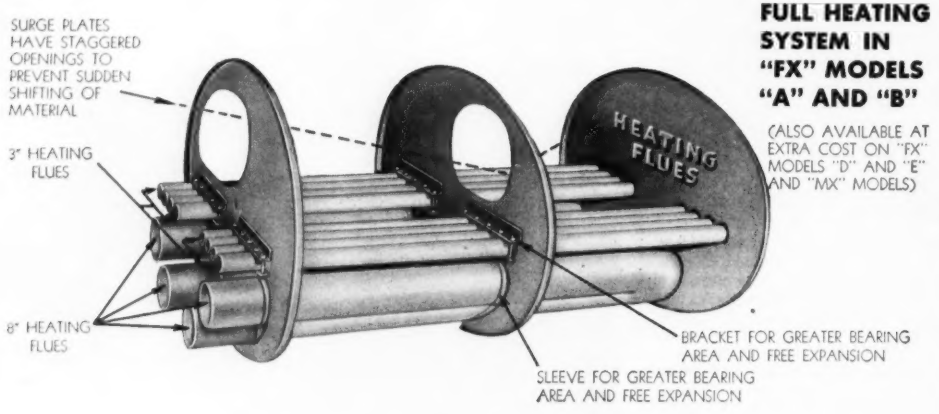
Other contractors figured on the necessity of using a large crane with long boom to reach from outside a building being erected. Gurtzweiler, taking advantage of his MICHIGAN'S compact size and maneuverability, planned to work from a central point *inside* the building. Result? Henry Gurtzweiler, Inc. got the job . . . another of the many on which the MICHIGAN has given them a competitive advantage.

Moreover, Mr. Gurtzweiler states that although the truck crane is five years old and never has had an idle day, it is still in perfect condition and has had very little maintenance. Why settle for less? Next time you need a truck crane . . . get a MICHIGAN!

MICHIGAN POWER SHOVEL COMPANY

495 Second Street, Benton Harbor, Michigan, U. S. A.

Etnyre offers you a Faster Heating System!


SURGE PLATES HAVE STAGGERED OPENINGS TO PREVENT SUDDEN SHIFTING OF MATERIAL
3" HEATING FLUES
8" HEATING FLUES
HEATING FLUES
BRACKET FOR GREATER BEARING AREA AND FREE EXPANSION
SLEEVE FOR GREATER BEARING AREA AND FREE EXPANSION

FULL HEATING SYSTEM IN "FX" MODELS "A" AND "B"

(ALSO AVAILABLE AT EXTRA COST ON "FX" MODELS "D" AND "E" AND "MX" MODELS)

Etnyre "Black Toppers" with low pressure (atomizing-type) burners *heat faster* than any other distributors built today of the same capacity, with same cab-to-axle chassis, for these reasons:

1. Etnyre higher heat input — 12 to 13 gallons of fuel oil compared with 6 to 10 gallons for other units.
2. Larger heating flue area per gallon of material — due to a longer tank of smaller oval, made possible by locating the circulating system BELOW the tank instead of at one end of tank.
3. Larger flues per gallon of material burned, resulting in less restriction of combustion.
4. The Etnyre return line directs material forward at high velocity along hot flues causing rapid heat transfer from flues to material, more uniform temperature throughout load, and a reduction of carbon formation on flues. Compare this with taking material out of one end of tank and merely pouring it back in opposite end!

Get the facts — find out how Etnyre's pioneering experience results in a more economical, more dependable, more accurate distributor. Call nearby Etnyre Dealer, or make inquiry direct to . . .

E. D. ETNYRE & CO.
OREGON, ILLINOIS, U. S. A.

ETNYRE
"Black-Topper"
BITUMINOUS DISTRIBUTORS

SANSTORM
LOW-COST
SANDBLASTING
"Put a Sanstorm on the job and you blast high costs!"
Save with Sanstorm's exclusive Non-Stop, Non-Plug Action. Simple, rugged construction insures long-life, trouble-free operation.
With a heavy duty model or husky little portable, you Save with Sanstorm!
Write, Wire or Call C. L. Spears For Further Information
SANSTORM
modern
SANDBLAST MACHINES
Santa Clara & H Sts. Fresno, California
DEALERS IN ALL PRINCIPAL CITIES

SPEED FORMS
Make BIG SAVINGS
on Labor and Material

You Don't Have to Buy New Forms for Every Poured Concrete Job

SPEED FORMS can be set up, stripped, cleaned, moved and reused in far less time than wood. Lightweight, easy to handle. No heavy bracing needed. No gadgets or special fastenings—Units go together with wedge clips.

Made of Steel—Good for reuse again and again on job after job indefinitely without repair. Reduce material costs way below wood—Many records of 400-500 and more uses.

Just send us plans of the job. Let us show you how to save *Real* Money on Form Work. Write Dept. CR. Ask a representative to call.

IRVINGTON FORM AND TANK CORP.
20 VESEY ST., NEW YORK 7, N. Y.

DRIL-JAK—Anyone who's wrestled with an electric drill, especially on overhead work, will appreciate the latest attachment which not only holds the tool in correct alignment, but also can exert a force behind it up to 2,000 lb. The mechanical friction grip action of the tool works like a simple lifting jack to force the drill motor ahead. An instantaneous pressure release works from the lift handle, providing one-hand control. It will fit any standard drill motor with ½-in. capacity or larger, is 34½ in. long and has a maximum lift of 30 in. Extension pipes with adapters can be added to a maximum of 30 ft so that pressure can be applied against floor wall, ceiling or posts. Pressure pads for pipe end and shank end distribute pressure over greater areas when drilling, pushing, shoring or bracing. In the photo above, an ingenious workman straddles the fingers of a fork-lift truck, places the base of his Dril-Jak on one finger and easily drills overhead, forcing ¾-in. holes into the bottom of ⅝-in. steel beams.—**Time Saver Tool Co., Inc., 879 Addison Rd., Cleveland 3, Ohio**

PORTABLE AIR COMPRESSOR—A new 600-cu ft portable air compressor has been added to the Gardner-Denver line. It is mounted on a rugged undercarriage designed to provide the stamina required for moving the rig over rough terrain on construction projects. With the engine selected to provide reserve power at moderate operating speeds,

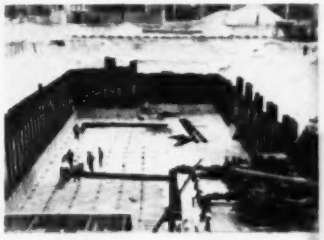
(Continued on page 179)

HOW TO HANDLE WET JOBS

#6 of a Series

ROCKAWAY SEWAGE TREATMENT WORKS

Contractor: Merritt-Chapman & Scott
Pumping: Wellpoint Dewatering Corp.



NO BRACING—SUBGRADE 31 FT BELOW JAMAICA BAY

Location was Rockaway Peninsula, sandwiched between Jamaica Bay and the Atlantic Ocean. Ground water had to be lowered to a maximum depth of 31 ft. Wellpoint Dewatering Corp., a Griffin associate, was employed to handle the intensive pumping problem.

Griffin Wellpoints took the job in stride and pumped 6 million gallons per day, round-the-clock for 9 months, to drain the entire 2-block-long project. Because of limited working space, steel piling was required in the lower portion of the deep excavation. Contractor desired to eliminate cumbersome cross-bracing; Griffin engineers planned wellpoints so that hydrostatic pressure was considered zero in piling design. Steel sheet piling was cantilevered with a penetration of 15 ft below subgrade.

• Result: Absolutely no cross-bracing—unobstructed working area—job completed ahead of schedule. For "quick-dry"...specify ...Griffin.

GRIFFIN
WELLPOINT CORP.
881 East 141st Street, New York 54, N. Y.
Hammond, Ind. Houston, Tex. Jacksonville, Fla.
In Canada: Construction Equipment Co., Ltd.
Toronto Montreal Halifax

Have You Load Limit Problems?

Solve Them with SMITH *LOADLIMIT* Truck Mixers

Are your present concrete prices based on bigger payloads than today's highway laws permit? If they are, you may find the answer to your problems in Smith LOADLIMIT Mixers.

Smith 6½ cu. yd. LOADLIMIT
Transit Mixer discharging into a concrete bucket. Note all discharge operations are performed by driver while he is standing on the ground. No need for climbing up on machine.

LIGHTEST WEIGHT in a Really RUGGED Mixer!

Smith LOADLIMIT models were designed to lick your weight problem, but without any sacrifice in sturdy working parts. They have the same trouble-proof transmission, the same Manten steel drum, the same bevel gear drum drive and the same oil type clutches that have made Smith the first choice in truck mixers all over the United States. You save a lot of weight through Smith's exclusive design. The patented feed chute . . . patented charging cone . . . and patented T-shaped blades make it possible for you to operate a Smith LOADLIMIT without a closing door. And by removing chute lifter, sign panels and operator's platforms — *all parts unnecessary to mixer operation* — there is an additional saving in weight.

GET THE FACTS — A new LOADLIMIT Bulletin No. 251 is just off the press. It tells you how you can meet highway weight limits with Smith LOADLIMIT models. Write for copy.

THE T. L. SMITH COMPANY, 2851 North 32nd St., Milwaukee 45, Wis., U. S. A.

SMITH
THE T. L. SMITH CO. MILWAUKEE U.S.A.

CONCRETE MIXERS

For BIGGER and BETTER Concrete Mixers and Truck Mixers . . . LOOK TO SMITH

(Continued from page 177)

the compressor is an 8x6½x6, operates at 1,200 rpm and is designed with large valve areas, large radius air passages and carefully engineered ratio of low to high pressure cylinders—features which are said to provide the rated 600-cu ft capacity with good compression efficiency. Like other G-D portables, the new 600 is a two-stage machine with water-cooled compressor cylinders. — **Gardner-Denver Co., Quincy, Ill.**

END-DUMP HOPPER—Bulky loads of loose material such as sand, gravel, sawdust, ashes and scrap can be toted easily in this 4,000-lb capacity end-dump hopper designed by Yale & Towne for its 4,000-lb electric high-lift trucks. A specially shortened platform accommodates the 80-cu-ft hopper and the regular plaform elevating mechanism does the dumping.—**The Yale & Towne Mfg. Co., Philadelphia Div., Philadelphia 15, Pa.**

PORTABLE CRUSHER—A portable crushing, screening and loading plant, known as 880 SENIOR "R", incorporates new engineering developments to increase capacity, yet keeps travel weight within state highway limitations. The plant features a 10x36-in. roller-bearing jaw crusher, 30-in. dia by 22-in. face star-gear, roller-bearing roll crusher, and a 4x10½-ft deck, inclined gyrating screen. Driven by a single 115-125-hp power unit mounted on the plant (or by a separate side drive through a universal joint connection from separate truck-mounted power), it can be fed by shovel, truck or dragline direct from pit to hopper or with optional 180-deg swivel feed conveyor. Combined with a Universal 546 Primary, it is recommended highly for quarry operations. The addition of Universal's SENIOR "R" two-stager increased the number of Gravelmasters to six, with capacities from 75 to 270 tons per hr.—**Universal Engineering Corp., Div. of Pettibone Mulliken Corp., Cedar Rapids, Iowa.**

You Get More for Your Money with SIMPLEX RATCHET LOWERING JACKS

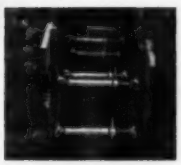
IN SPEED—SAFETY—VERSATILITY—

Look! full capacity lift on Cap or Toe!

For every jacking job—pushing, pulling, raising, lowering—you'll find Simplex Jacks give you *more for your money*... have a *wider range* of usefulness.

Simplex Ratchet Lowering Jacks are available in capacities from 1½ tons to 35 tons...with full capacity lift on *cap* or *toe!* Fast and safe, they operate notch by notch on the downward stroke of the lever—cannot be tripped. Speed trigger—used to drop rack bar to desired position for extra speed—can be operated only when there is no load on Jack. For safety's sake...insist on Simplex.

Protect against cave-ins with Simplex TRENCH BRACES



Made of steel drop forgings, with ball and socket joints at each end for quick adjustment and tight grip. Simplex Trench Braces are adjustable to any width trench and are sold with or without pipe in all sizes. Protect against cave-ins, injuries and costly re-digging.

Cut friction 88% with Simplex HEAVY DUTY SCREW JACKS

A single large steel pivotal ball, nested in a hardened ball seat under cap, centers the load on Simplex Heavy Duty Screw Jacks and reduces friction by 88%. Ball won't flatten—cap can't slip. 4-way and Ratchet Head Types. Available in 31 models of 10 to 24 ton capacity.

Get more jacking power—longer life with Simplex HYDRAULIC JACKS

Simplex Hydraulic Jacks are available in eight models with capacities from 3 to 100 tons. These jacks operate vertically or horizontally...have drop-forged steel caps, pressure-tested bases, non-sticking, spring-controlled ball valves and high-pressure packing seals of Neoprene. Safety-tested to 50% over rated capacity. Single and double pumps.

WRITE FOR GENERAL CATALOG NO. 50

Simplex LEVER · SCREW · HYDRAULIC Jacks

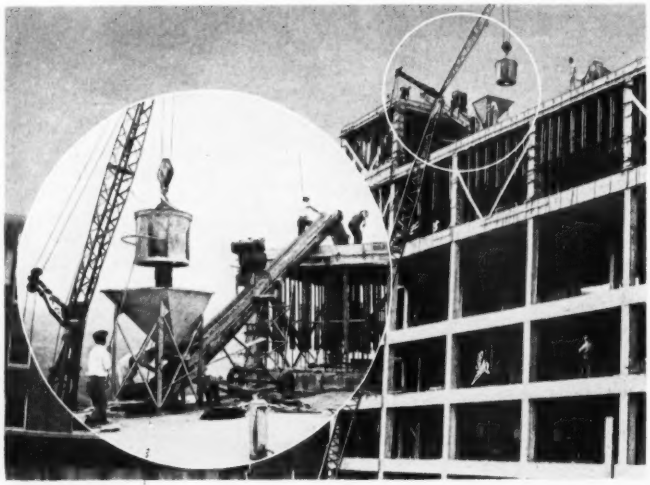
TEMPLETON, KENLY & COMPANY

1008 SOUTH CENTRAL AVENUE • CHICAGO 44, ILLINOIS

One in a series of factual reports from owners of Farquhar Conveyors

FARQUHAR CONVEYORS SAVE TIME AND LABOR IN POURING CONCRETE*

* during construction of large eastern hospital



DURING construction of a large eastern hospital, the contractor installed this Farquhar Trough Conveyor to speed delivery of wet concrete. Carrying the concrete directly from the mixer truck to the pouring operation, the Conveyor saved time and money for the contractor . . . and hard, back-breaking work for his men!

Whether you move coal, gravel, sand, aggregates, cartons, boxes, bundles, bales, or any kind of bulk or packaged materials—horizontally or from floor to floor—Farquhar can cut *your* handling costs to rock bottom! One or more of the complete line of Farquhar portable, semi-permanent, and permanent conveyors will solve your handling problem. Our engineers will be glad to consult with you . . . at no obligation!

Farquhar CONVEYORS SAVE YOU MONEY

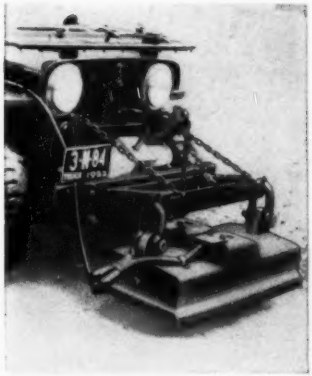
FREE! "Owners Report" —a booklet of case histories of money-saving conveyor installations. Write: A. B. FARQUHAR CO., *Conveyor Dept.* E-26, 142 N. Duke St., York, Pa., or 618 W. Elm St., Chicago 10, Ill.

WORLD'S MOST COMPLETE CONVEYOR LINE

A. B. FARQUHAR COMPANY Division of THE OLIVER CORPORATION

PLASTER-MORTAR MIXER—This new Kwik-Mix 3-P tilting plaster-mortar mixer has 3- to 4-ft capacity, and its 29-in. width clears even narrow doorways for work indoors. A low 37-in. shoveling height makes charging easier, and its wide-base pneumatic tires add to general stability and flotation. There's also a simple de-clutching system for fast engine starting. The new 3-P has four non-clogging sawtooth blades which the manufacturer says produce a perfect texture mix. Countershaft and paddle shaft bearings are antifriction type and lifetime-lubricated. A 3-hp air-cooled engine supplies power through multiple V-belts.—**Kwik-Mix Co., Port Washington, Wis.**

THREE NEW COMPRESSORS—A ready supply of compressed air almost anywhere is the aim of this manufacturer with the introduction of three portable air compressors. Trailer-mounted, with standard hitch for towing behind a car or truck, the compressors also can be had with skid mountings where full mobility is not required or where mounting in a truck body is desired. Built to deliver 21, 35 or 50 cfm, they are 4-cylinder, 2-stage V-type and feature trouble-free valves, forged steel crankshafts, balanced and precision ground ball-type main bearings and automotive insert-type rod bearings. The compressors have automatic oiling to all parts. Cooling is accomplished through finned heads, cylinders and inter-and after-coolers. For economy and maximum life, the compressors have automatic unloaders. They are driven by industrial type air-cooled gasoline engines, available with either electric or magnetic engine starting systems. The 35- and 50-cfm compressors are equipped with governors to slow down automatically the engine while the compressor is unloading. The chassis of the units also serves as a tank, is equipped with a drain for accumulated moisture and is tested for 300 psi.—**DeVilbiss Co., Toledo 1, Ohio.**



ROAD-SWEEPING MAGNETS—Recent surveys conducted by bus and truck operators, tire companies and parking lot operators have shown that more tires are punctured by ferrous metal pieces than by all other causes combined. These results prompted an enterprising manufacturer to develop and introduce a new line of road-sweeping magnets for picking up nails and tramp iron from highways, public and factory parking lots and airport runways. Of sturdy fabricated steel construction, Ohio Road Sweeping Magnets are lightweight, with special eyelets for attachment to any truss-type structure on front of a truck or jeep. In most installations the magnet can be raised or lowered by the driver. A gasoline-driven generator energizes the magnet controller, with both units mounted in the truck. An on-off switch is within easy reach on the instrument panel. A number of different lengths are available for single- or multiple-magnet installations. — **The Ohio Electric Mfg. Co., 5900 Maurice Ave., Cleveland, Ohio**

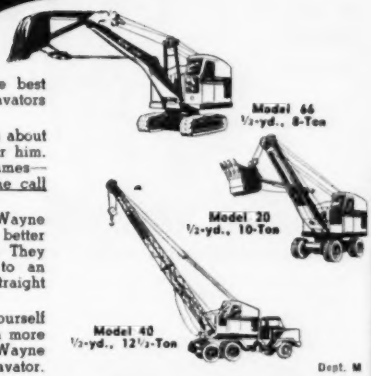
"WAFER" MOTOR—A new electric motor, featuring an exceptionally short over-all length, is suited ideally to applications requiring a totally enclosed air-cooled unit with flat design. Available in ratings from 1/20th through 5 hp and in speeds from 450 to 3,600 rpm (single-phase or polyphase), it is known as a wafer motor. An example of this unit's value is quickly apparent on ventilating and air-moving installations where the motor itself is to be mounted within the piping or vent. The unique frame design permits mounting by means of "ears", drilled and tapped holes in endbells, or by any other special requirement of the user. It can be mounted in any position, shaft up or down and when mounted in this manner, the fan can be connected directly to the motor's output shaft, eliminating pulleys, belts, brackets and fan shaft.—**Reuland Electric Co., Alhambra, Calif.**

Owners say, "Wayne Crane is the best buy of all heavy-duty, ½-yd. crane-excavators on the market today!"

Ask any one of the owners near you about the job his Wayne Crane is doing for him. Your dealer will give you their names—Wayne Crane will pay for a telephone call to any one of them. You can't lose!

This unique offer is being made by Wayne Crane because they believe there is no better way to tell you about their equipment. They know that when you talk directly to an owner . . . you get all the facts "straight from the horse's mouth."

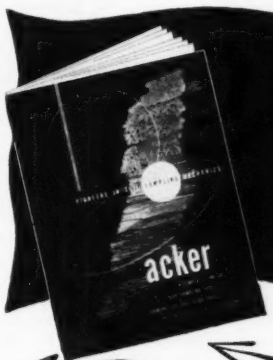
Take this opportunity to prove to yourself that Wayne Crane is built to give you more years of profitable operations. See Wayne Crane before you buy any crane-excavator.



Dept. M

WAYNE CRANE DIVISION, AMERICAN STEEL DREDGE COMPANY INC., DEPT. M, FORT WAYNE 1, IND.

Complete service and parts facilities are maintained by Wayne Crane Distributors in all principal cities.



FREE!
SOIL SAMPLING CATALOG

OVER 80 ILLUSTRATIONS

33 YEARS IN THE MAKING

This complete, instructive collection of information about soil sampling in all subsurface conditions, shallow or deep, with hand or power driven tools, is yours for the asking. Modern sampling techniques are discussed with recommendations as to tools and accessories best suited for fast, accurate, economical sampling.

Use the coupon or write for Bulletin 25.

REMEMBER, Acker also makes a complete line of Diamond and Shot Core Drills, Drilling accessories and equipment.

★

ACKER DRILL COMPANY, INC.
Scranton, Pa.
Pioneers in Soil Sampling

Send me my free copy of Bulletin 25 CM&E.

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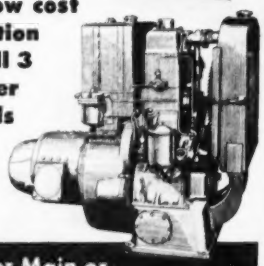
City _____ State _____

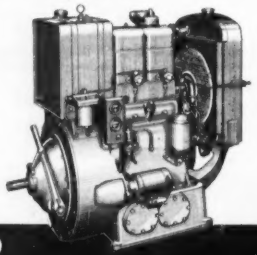
NORDBERG Diesel Units

...low cost solution to all 3 power needs



1 For Main or Standby Electric Service

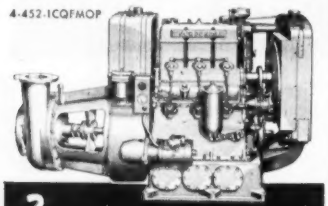
• Nordberg 1, 2 and 3-cylinder Diesel Generator Sets produce from 6 to 30 kilowatts. These sturdy, reliable units are ideal for providing main or standby electric power for almost every need.



2 For Direct Power Drive

• Nordberg Diesel Power Units offer from 10 to 45 hp for a wide range of straight power requirements, in direct drive with clutch or stub shaft power take-off.

4-452-ICQFMOP



3 For Pumping

• Nordberg Diesel Pumping Units combine low cost, reliable power with efficient centrifugal pumps for practically all pumping jobs up to 3200 gpm.

Write for literature.

NORDBERG MFG. CO., Milwaukee, Wis.

NORDBERG
BUILDERS OF AMERICA'S LARGEST LINE OF HEAVY DUTY DIESELS

PULVERIZING SOIL to a depth of 12 in. with a Wood Preparizer saves at least four steps in the processing of subgrade for the improvement of runways at El Toro Marine Base on the West Coast. When moisture content is low, water is added and second pass made.

Machine Saves Subgrade Steps

CONTRACTORS on the El Toro Marine Air Base—Bressi and Bevanda Constructors and A. Teichert & Son, Inc.—saved at least four steps in processing subgrade by use of a machine that pulverizes natural soil to a 12-in. depth. The machine involved—the Wood Manufacturing Co.'s Model P-600 Preparizer—processed about 1,500 cu yd an hour on the runway work.

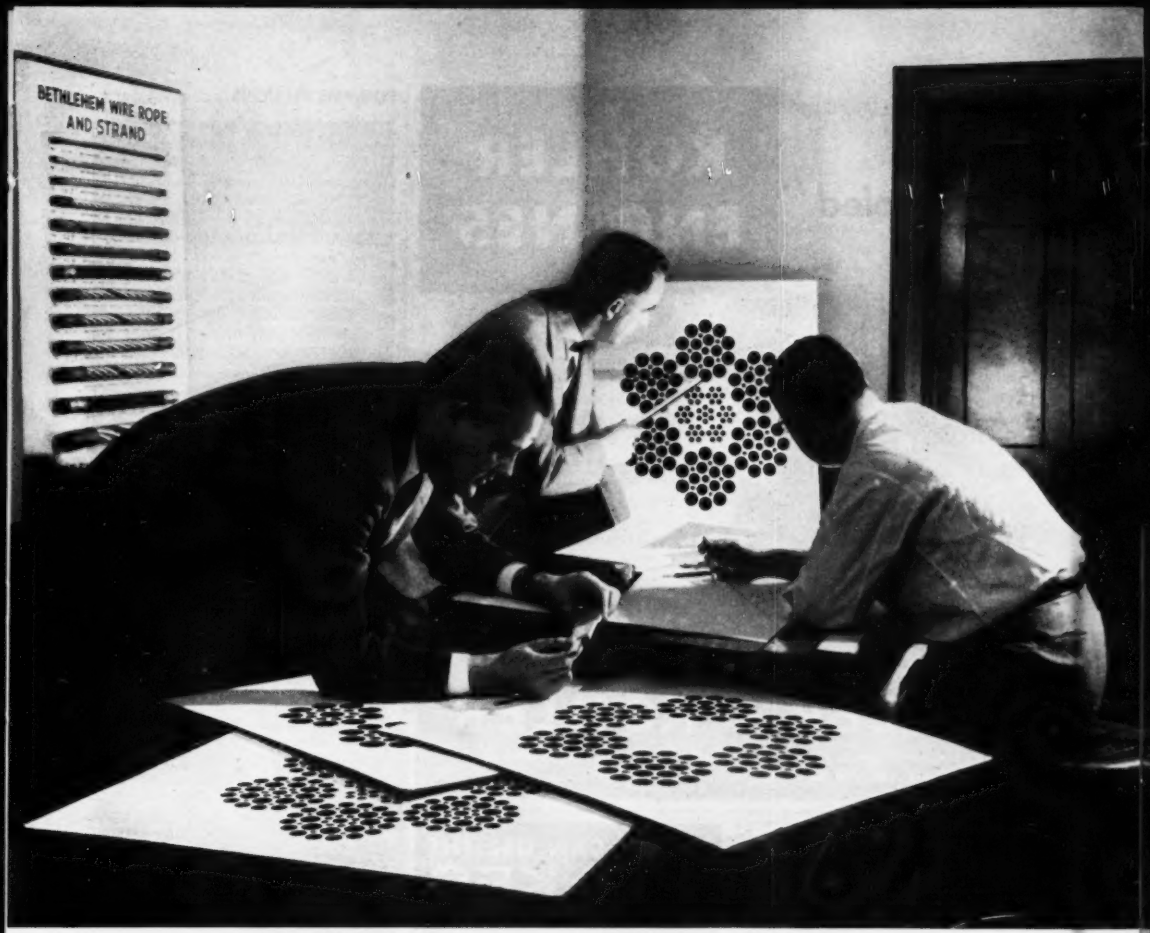
The machine's pulverizing action works to 12-in. depths. Under old procedures, where rooters and disks were used, only 6 in. could be worked at a time. That meant stripping off the top 6 in., rooting and disking the bottom 6 in., adding water and disking again. This was rolled and the top 6 in. replaced. The procedure was then repeated.

With the Preparizer, the entire rooting-disking procedure could be accomplished to 12 in. in one pass. When moisture was deficient for optimum density, a second pass was made after addition of water. Even so, this reduced the procedure a significant amount.

The Preparizer work was supervised by Robert T. Skinner, excavation superintendent for the contracting combination. Project manager was G. C. Weeshoff who is vice-president for A. Teichert & Son, Inc. The job was under Navy jurisdiction with Captain A. I. Flaherty officer in charge of construction.

ROUGH SURFACE is left behind when hood is raised. Lowered hood (at top) confines large pieces until reduced to proper size.

COMING ... in July Equipment-Maintenance Directory



Much of the durability of Bethlehem wire rope can be traced back to the engineer and the drawing-board.

So that your Wire Rope will serve you well

These engineers are engaged in a typical discussion of the product they live with—Bethlehem wire rope. They know the tremendous importance of good design, good engineering . . . and they will spend many hours, sometimes days, over a seemingly small point that they feel will improve the quality of Bethlehem rope.

The making of wire rope is more than a matter of drawing wire and laying wires and strands into intricate patterns. Wire rope starts in the minds of engineers, and at Bethlehem these minds are busy ones.

When you rig with Bethlehem rope, you can be sure that the rope has been well designed, well engineered . . . and that every subsequent step has received the same degree of care.

This care pays off on the job, where Bethlehem rope will serve you well. You can depend upon every foot, every inch of it, no matter how tough the going.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

When you think WIRE ROPE . . . think BETHLEHEM

4-Cycle Air-Cooled

KOHLER ENGINES

Kohler Engines provide reliable power for a wide range of uses. Compact, quick-starting. Engineered and built to the high standards that have won world-wide acceptance for Kohler Electric Plants in construction and other industries. The Kohler mark has been identified with quality products for over three-quarters of a century. Write for information on distributor's sales franchise.

Kohler Co., Kohler, Wisconsin. Established 1873

KOHLER OF KOHLER

PLUMBING FIXTURES • HEATING EQUIPMENT • ELECTRIC PLANTS
AIR-COOLED ENGINES • PRECISION CONTROLS

UNI-BATCH
Cost Saving Equipment
Use With 6S to 16S Concrete Mixers—Inclusive

Charge bin with end loader having mechanical or hydraulic type bucket.

Pat. Pending

Pull Uni-batch behind pick up truck.

Write or phone for more details
Winslow Scale Company
Terre Haute, Indiana—P. O. Box 1198
Used In 30 Different States

IF YOU CAN USE THE SHAKES ADVANTAGEOUSLY

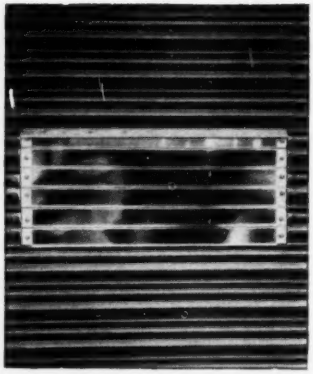
—GET THIS VIBRO-PLUS "TOPDOG"* VIBRATOR

It's equipment of a thousand uses—for speeding the flow of materials through hoppers, bins, chutes—for vibrating tables or screens in packing, sorting or testing—for effective noiseless vibration in casting, mixing or loading—in fact, wherever a vibrating impact is useful, VIBRO-PLUS offers these exclusive advantages: Greatest ease of attachment—unsurpassed versatility—extreme lightness of weight—and real "heavy duty kick." Tell us your vibrating problems—we'll send you the proper bulletins.

*Reg. U. S. Pat. Off.

VIBRO-PLUS PRODUCTS INC.
54-11 Queens B'lvd., Woodside, L. I.

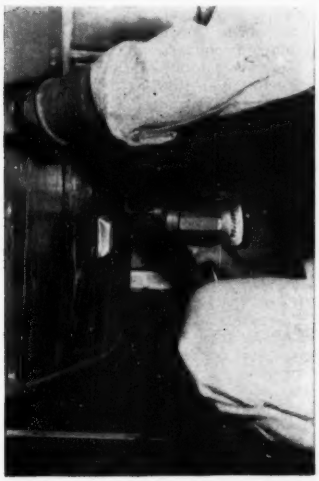
EQUIPMENT NEWS . . . Continued



FULL-VISION WINDOW ON ROLLING DOOR—After 5 yr of study and test installations, a manufacturer has now come up with a full-vision window that is part of a rolling steel door. Hitherto, windows have been the slit type which could be no higher than the 4-in. height of any one of the slats that make up the door. The Full Vision Window can be had in heights of 12, 16, 20 or 24 in. and up to 20-in. widths. Two or more can be used on larger doors. Windows are furnished presently with transparent plastic lights, shaped and assembled, as shown, to coil with the door. They preserve a solid closure, keep out drafts, admit plenty of light, help control truck movement.—**Cornell Iron Works, Inc., 36th Ave. and 13th St., Long Island City, N. Y.**

FIRE PROTECTION SYSTEM—Air Foam, a fire-fighting substance developed several years ago, and used extensively in aircraft and shipboard, is proving its adaptability for industrial use. One such case, shown here, is the special Air Foam system installed in Syracuse, N. Y., at the Solvay Process Division plant of Allied Chemical and Dye Corp. This fire protection system is located in

the company's chlorination and distillation buildings, where benzene and benzene derivatives are processed. After installation, successful operational and approval tests were conducted for company officials and fire insurance underwriters. The system depends on the integration of deluge sprinkler equipment and a foam injection system. Water pressure is maintained at 50 psi rather than the 7 to 8 psi, normally maintained on deluge systems. This high pressure breaks up the water to the fineness of spray discharge. Operation is obtained through standard rate-of-temperature-rise heat detectors which open the deluge system and inject foam liquid stabilizer into the sprinkler system riser. This mixture is aerated into a fire-fighting foam at the system outlets. Air Foam is discharged at 2 gpm, or approximately 3 in. per min, and there is enough to allow operation for 10 min, after which water spray continues. This water will wash away clinging foam later on, and full cleanup is said to be accomplished. **—"Automatic" Sprinkler Corp. of America, Youngstown 1, Ohio.**



ELECTRIC DRILLS—A new line of portable electric drills incorporating three design styles with seven speeds is said to solve practically all types of installation problems in metal, wood, plastic or combination materials. These ¼-in. capacity drills are available with pistol grip, spade handle and center contour handle design in free drilling speeds of 600, 800, 1,000, 1,750, 2,500, 3,500 and 5,000 rpm. Weighing only 3½ to 4 lb, they are of aluminum construction with balanced armatures and precision-matched gears to reduce vibrations. All three models have ac-dc motors and can be had for 115 or 230 v, 25 to 60 cycle current. **—Mall Tool Co., 7740 S. Chicago Ave., Chicago 19, Ill.**

"Our Hydra-Lift has replaced a much larger, more expensive crane on this pipe stringing job,"

says Mr. James B. Ramsey, Chief Engineer and Superintendent, Municipal Water Works, Kansas City, Missouri

The Kansas City Water Department, in the construction of a new water main in Kansas City, North, is using a Pitman Hydra-Lift to load and string more than 7 miles of 16 and 20 inch cast iron and concrete pipe. The pipe weighs up to 3,600 pounds per joint.

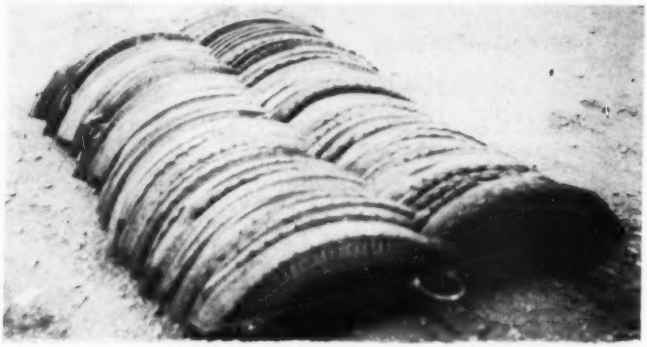
Formerly, the water department shuttled a large mobile crane back and forth from pipe yard to job site to load and string the heavy pipe. Now they have a Hydra-Lift mounted on a tractor-trailer, and this single unit does the loading, hauling and stringing that formerly required two pieces of equipment. "It's the most economical way I know of, and I don't know where else we could get as much lifting power for the money," Mr. Ramsey says in regard to the Hydra-Lift.

The Water Works owns a second Hydra-Lift that is mounted on a 1½ ton flatbed truck. It is in daily use for pickup and delivery of pipe, valves, and fittings, and for setting hydrants. They expect to buy a third Hydra-Lift soon.

Because Hydra-Lift is a versatile truck-mounted crane that combines lifting power with mobility, it has become an important working tool for contractors, municipalities, utilities and others all over the country. It is easily mounted on the frame of any truck 1½ tons or over. The hydraulically-powered boom swings in a complete 180-degree arc and lifts through an arc of 100 degrees; boom telescopes from 12 to 17 to 22 feet. Lifting capacity is 6,400 pounds.

Chances are, you're doing some job right now that you could do faster and cheaper with Hydra-Lift. Write today for full information on this new inexpensive truck crane.

PITMAN MANUFACTURING COMPANY
300 West 79th Terrace **Kansas City, Missouri**



BLASTING MAT—When it comes to the subject of blasting mats, this is the situation: A light mat that's easy to handle will go up in the air with the blasted material; a heavy mat that keeps the blast down is hard to move and handle. This "Bombproof" mat (left) changes all that. It is constructed of old automobile tires whose cord construction, flexibility and abrasion resistance makes it long-wearing. Weighing only 20 lb per sq ft, they are constructed in 3, 4½- and 6-ft widths and in lengths up to 10 ft or more. Harter and Thayer Co., contractors from Princeton, Minn., found that "they have numerous advantages over other types, are durable, flexible and easily repaired." On a Duluth, Minn., building site they "covered every charge during the blasting of some 2,000 yd of solid rock without repair to the rubber mats."—**O. B. Wasbotten & Sons, 1609 Arrowhead Rd., Duluth 2, Minn.**

LARGE VIBRATING SCREENS—Kolman screens, now widely used for portable loading and screening units, include single- and double-deck models from 2x4½-ft to 3x6-ft sizes. Now the line has been expanded to include a larger variety of single-, double- and triple-deck screens. The Series "C" includes multiple-deck units 3 and 4 ft wide and ranging to 8 and 10 ft long. Also added is a larger single-deck model, 42 in. wide and available in either 6½- or 7-ft lengths, which is designed for use with large bucket loaders, 30-in. belt portable conveyors and similar equipment. The Kolman spring design allows full freedom of vibrating movement and absorbs vibrations so they are not transmitted to attached equipment. Heavy-duty springs and bearings are used for long service, and parabolic design of decks utilizes all space for maximum capacities.—**Kolman Mfg. Co., 5566 W. 12th St., Sioux Falls, S. D.**

CINDER CRUSHER—A 3-roll cinder crusher, first developed for the Iowa State Highway Department, is now available. Size of material produced is for best traction on hills and curves and to reduce skidding at crossings. Power plants also can use it to render cinders marketable. The crusher will reduce them to a size suitable for use in cinder concrete block plants. The unit is designed to produce 15 tons of minus ⅜-in. and up to 50 tons of minus ¾-in. crushed cinders per hr. The third crusher roll accomplishes preliminary reduction and directs the partially crushed material into the other two rolls. Rolls are of spring-release type and pass hard foreign material without damage. Gears are of heavy-duty semi-steel.—**Eagle Iron Works, 129 Holcomb Ave., Des Moines, Iowa.**

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when you need it
from *SAFE*
LUCEY BOILERS

From 15 to 17 inches steam space above low water level, insuring ample steam reserve for sudden excessive demand.

Used by many Road Contractors with their asphalt plant installations.

May be fired with coal, wood, gas or oil.

For easy portability, boiler can be skid mounted with built-in base for burner.

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Specify Carlon...

The first real pipe that is plastic!

Rapid installation . . . ease of handling . . . unequaled service life . . . these features make **CARLON** superior for many construction applications. It is recommended for drinking water lines, sludge removal, drainage and irrigation systems, ventilating and cooling lines, hydraulic sluicing, concrete-encased conduit, and intake and exhaust piping.

CARLON plastic pipe is **guaranteed** against rot, rust and electrolytic corrosion, will not accumulate scale or sediment, and is impervious to chemical attack of corrosive soils and waters. It can be installed quickly without special tools or rigging equipment. Furnished in **long lengths**, **CARLON** requires fewer connections. A full line of molded plastic fittings is available to join sections of **CARLON** or to connect this new pipe with established metallic systems.

Specify the Pipe with the Stripe! WRITE TODAY FOR CATALOG

CARLON CP 551-CP

CARLON PRODUCTS CORPORATION

IN CANADA: MICRO PLASTICS, LTD., ACTON, ONTARIO

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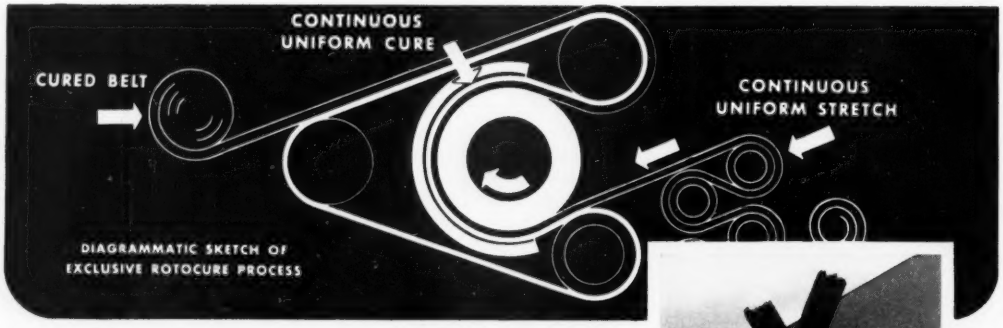
For Continuous Operation



Buy a Belt that's Continuously-made

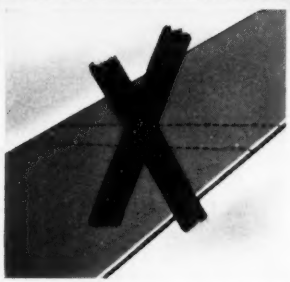
(Rotocured BWH Conveyor Belts have no OCS*)

Belts made by the conventional flat press method of "start and stop" curing tend to fail early because segments are *overcured*. Here's how it happens: A section is cured. STOP. Another section is cured. STOP. Part of the first section is cured *a second time* because the belt is advanced less than a full press length. This part of the belt becomes a weakened structure about 2" to 4" wide. These press overlaps occur *every 30' to 40'!*

The "cure" for this problem is *avoid overcuring* — and that's exactly what Rotocure avoids with its *continuous* endless technique of curing. BWH Rotocured belts thereby give users the following *specific* advantages:

1. **Increased belt flex life (up to 40%).**
2. **Elimination of mechanical distortion at the press ends.**
3. **Constant, uniform stretch.**
4. **Uniform, abrasion-resistant covers.**

Your BWH distributor knows belts and can give you real help on your conveyor problems. Ask him for the full dollars and cents story on ROTOCURE and you'll see how your per ton costs can drop in materials conveyed. Check with him on BWH Transmission Belts too — there's another cost-saving story through operation at lower tensions.



***Overcured Sections — present every 30' to 40' in all belts made by flat press method.**

BWH — DEPENDABLE RUGGEDNESS

Another Quality Product of

BOSTON WOVEN HOSE & RUBBER COMPANY

Warehouse Stock: 111 N. Canal St., Chicago, Illinois **Distributors in all Principal Cities**

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NEW EQUIPMENT BRIEFS

A new **lightweight generating set** with capacity of 2,000 w at 1,800 rpm is available in ac or dc and in all standard voltages from **Sheppard Diesels,** Hanover, Pa. The unit is designed to replace as much as 1,000 lb of batteries on marine installations and weighs only 395 lb, powered by a single-cylinder Sheppard diesel.

A **latch-type design wire rope cutter** has been developed by the **Manco Mfg. Co.,** of Bradley, Ill., to supplement the well-known Guillotine line of metal-cutting equipment. It exerts up to 50 tons thrust, which makes clean cuts through wire rope up to 1¾ in.

For exhausting dangerous or obnoxious fumes, dirt, heat and smoke and other applications where it is desirable to have the motor outside the air stream, **Standard Electric Mfg. Co., Inc.,** West Berlin, N. J., has brought out a **general-purpose type fan.** Features include sealed SKF bearings, adjustable motor base for belt takeup and heavy cast aluminum fan blade ranging from 18 in. to 42 in.

Building material dealers and contractors can give prospective customers an accurate and realistic idea of how a particular form of asbestos siding will look when in place on a house by using an ingenious sales device called a **siding visualizer,** made by **The Ruberoid Co.,** 500 Fifth Ave., New York 36, N. Y. In the form of an attractively bound portfolio, it shows a series of full-color close-ups of Ruberoid's new asbestos sidings, showing details of the surface texturing and color combinations.

Newest addition to the famous Lufkin family of **"Red End"** rules is the K-46F, an extension type made for inside, outside, regular, and flat reading measurements. Its boxwood finish is protected by a tough plastic coat. Both sides of the rule are graduated. Available from the **Lufkin Rule Co.,** Saginaw, Mich., it is marked in consecutive fractional inches to 16th's and folded length is 8 in.

Guaranteed shatterproof, the new **"Level-It" level,** is housed in amber Tenite plastic and designed for easy reading. The large bubble can be read at a considerable distance, and the liquid remains fluid through wide temperature range. Manufactured by **Creative Plastics Corp.,** Stony Brook, N. Y., the Tenite plastic gives the level good resistance to weather and makes it impervious to salt and other corrosives.

No other Barrow Except *Jackmanco has it!*

PRESS FORMED, DOUBLE FOLDED CORNER CONSTRUCTION

Model M11-24B

Oldest and Largest Wheelbarrow Maker in America

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Extra Strength for long life
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This is just one of the many superior features of JACKMANCO Barrows and one of the reasons why Contractors buy more JACKMANCO Barrows than any other make.

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FLEXCO HINGED BELT FASTENERS

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- For joining grader, trencher, ditcher and other earth moving conveyor belts.
- For belts ⅜" to ½" thick.
- A FLEXCO fastener that is HINGED. Has removable hinge pin.
- Troughs naturally, operates through take-up pulleys.
- Strong, durable . . . pull or tension is distributed uniformly across joint.

Order From Your Supply House. Ask for Bulletin HF 500.

FLEXIBLE STEEL LACING CO. 4699 Lexington St., Chicago 44, Ill.

Pittsburgh Corning Corp., 307 Fourth Ave., Pittsburgh 22, Pa., has added a full line of 12-in. patterns to its 8-in. line of **functional glass blocks.** Like the forerunners, they are available in both light-directing and light-diffusing patterns.

A compact, **portable electric saw,** weighing only 10 lb, which makes all cuts in 2-in. dressed lumber at a 45-deg bevel cut, is announced by **Cummins Industrials, division of Cummins-Chicago Corp.**, Chicago 40, Ill. It is being marketed under the name MAXAW 700.

Said to be the first basic improvement for years in belt conveyor idlers, a **greasing design** is announced by **Chain Belt Co.**, 1600 W. Bruce St., Dept PR, Milwaukee 4, Wis. Rigid steel grease piping has been replaced by reinforced flexible grease tubing which will take higher gun pressures. These sections are made of just the right length to make them hug the sides of an inverted angle or channel base. Grease tube extension to the far side is accomplished by threading a flexible section through the base to the grease fitting at the near side.

11" DEPTH... STONE WELL PLACED

Not hard to see that this is the work of an APSCO Base Paver.

Nor is it difficult to see why this paver is so popular with road builders. With a spreading width of 8′ to 12′, depth to 12″, 150 tons per hour capacity and *no forms required,* it is really indispensable for speedy, economical base paving.

Photos—Courtesy Macadam Pavements —Columbus, O.

OTHER APSCO PRODUCTS:

Road wideners, trench rollers, bituminous pavers, widening chippers, etc.

Send for details

ALL PURPOSE SPREADER CO. Elyria, Ohio U.S.A.

An improved line of **bolt cutters, strap shears, hot line wire cutters and sheet metal hand tools** is being introduced by the **Interstate Drop Forge Co.**, 4051 N. 27th St., Milwaukee, who recently acquired the tool line of the Helwig Mfg. Co., St. Paul. This line is now re-appearing with heat-treated, drop-forged handles, plates and jaws. Helwig replacement parts, as well as the complete line of 18 major tools, are available from the Interstate Co.

Personal safety equipment (face-shields, respirators, ear defenders) can be cleaned and sanitized thoroughly and quickly with **MSA Cleaner-Sanatizer,** made by **Mine Safety Appliances Co.**, Pittsburgh 8, Pa. It's a dry powder in 1-oz envelopes. Users simply add contents of an envelope to a gallon of lukewarm water. Equipment is cleaned, rinsed and allowed to air-dry; no soap film remains, and the equipment is thoroughly clean with bacterial count reduced to levels judged safe by public health standards.

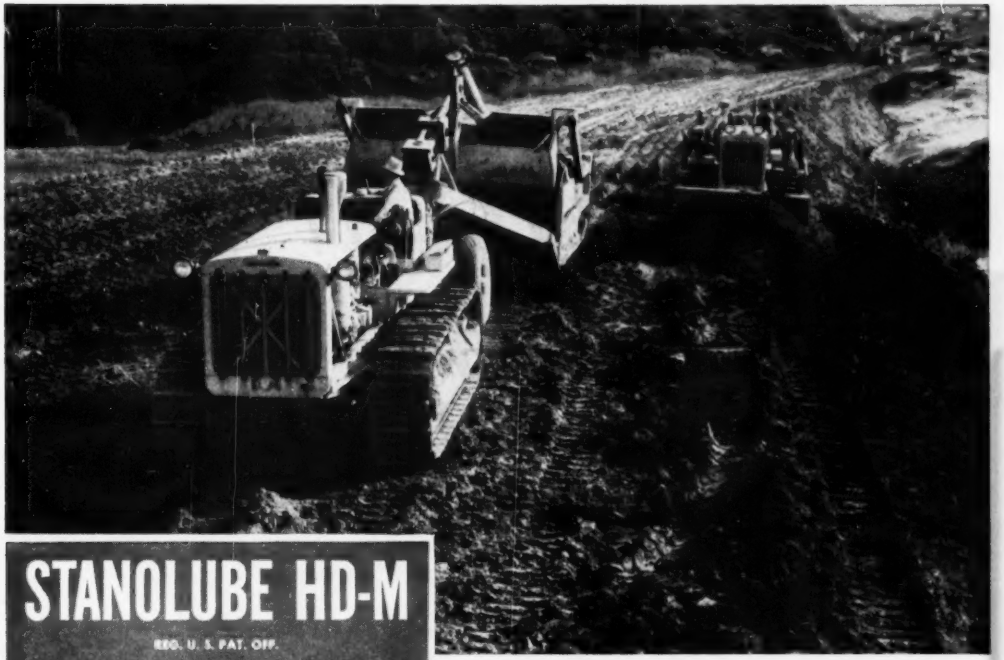
Clayton & Lambert Mfg. Co., Louisville 10, Ky., announces production of **blowtorches** capable of using either leaded or non-leaded gasoline as fuel. Announcement of use of the leaded gas in the company's CL-32A-1 or 600A-1 torch was delayed until successful field tests were established.

A 4,000-gal **bituminous distributor** has been built to specifications by **Rosco Mfg. Co.** of Minneapolis, one of the largest ever made by the company. The fully enclosed, streamlined distributor is of "frameless" semi-trailer, tandem-axle construction. Known as Model RQE-TT, it sports an 18-ft full-circulating Rosco spray-bar.

Equipto, Division of Aurora Equipment Co., Aurora, Ill., announces an 18-in. deep, 18-drawer **steel cabinet** as an addition to its established line of steel shelving, parts bins, work benches, stock carts and various storage units. Wider, deeper drawers and larger label holders are features of the new units which measure 5½ in. wide by 3½ in. high by 17 in. deep.

A **face shield** with sufficient clearance to be worn over glasses and/or industrial goggles is in production by the **Boyer-Campbell Co.**, Safety Division, 6540 San Antoine St., Detroit 2, Mich. Identified as Model 301, the shield is glove-buttoned to a form-fitting headgear. The greater clearance for glasses and goggles automatically affords better ventilation. Three types are interchangeable on one headgear: Plastic shield for general utility, fiber front for gas welding, screen window for scaling, heat, cyaniding and similar uses.

A new and better heavy-duty motor oil



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Motor Oil

for your harder-working engines

• New and better STANOLUBE HD-M Motor Oil is an improved additive-type lubricant that combines more effective detergent-dispersant action with greater oxidation stability. Result: greater protection for commercial and military trucks, busses, and construction equipment . . . greater protection for *your* harder-working engines.

More effective detergent-dispersant action and greater oxidation stability, proved by laboratory tests and confirmed in extensive field service, mean that engines stay cleaner under the toughest of operating conditions. Freedom from deposits means less engine wear, longer periods between overhauls, and lower maintenance costs. New STANOLUBE HD-M also offers the same bearing corrosion resistance and freedom from foaming which helped make STANOLUBE HD a preferred lubricant for heavy-duty applications during the past nine years.

Your nearby Standard Oil service-supply center stocks STANOLUBE HD-M Motor Oil for fast *local* delivery. This service-supply center is also headquarters for your Standard Oil lubrication specialist. Call him today. He can help you obtain maximum lubrication benefits with STANOLUBE HD-M, a new and better heavy-duty motor oil. Or write: Standard Oil Company (Indiana), 910 South Michigan Ave., Chicago 80, Illinois.

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They're all needed to keep steel production up

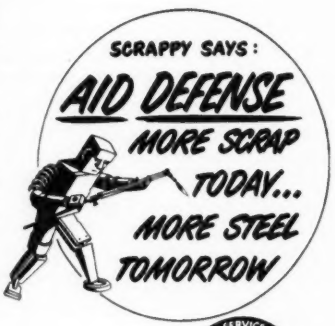
...TO AID DEFENSE

Every pound of unused iron and steel you have is needed to help steel mills and foundries keep production up to rising capacity.

Scrap inventories are alarmingly low. Mills that normally maintain inventories of several months, are now down to a day-to-day basis. Shutdowns are threatened.

One way we can maintain desired level of both military and civilian production is for you to *dig up* and *turn in* your iron and steel scrap now.

Get in touch with your local scrap dealer and write for the free booklet, "Top Management: Your Program for Emergency Scrap Recovery" to Advertising Council, 25 W. 45th St., New York 19, N. Y.



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prestressed concrete structures

the basics of design simply explained

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You will find here such basic considerations as **when and where** to use prestressed concrete—when it is practical and economically feasible.

The book gives a host of data on the two elements of this material—**steel and concrete**—and tells what kinds are used and how they behave when combined into prestressed members. Detailed facts and figures on stresses show how different prestressed concrete elements stand the conditions to which they are likely to be exposed.

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New PUBLICATIONS From MANUFACTURERS

The catalogs and bulletins reviewed below will keep you posted on latest developments in construction equipment and materials available for your use.

AIR MOVER—A compact 4-p folder on the M.S.A.-Lamb Air-Mover describes the adaptability of the instrument for use in industrial plants, mines and wherever else circumstances make it necessary to remove air contaminants from confined areas or to introduce fresh air for ventilation or rapid cooling. Employing compressed air or steam in its principle of operation, the horn-shaped device converts pressure into a large induced volume of moving air. Three available models are described in Bulletin DP-5.—**Mine Safety Appliances Co., Pittsburgh 8, Pa.**

CLAY PRODUCTS—This handy 90-p. booklet, describes everything in the clay products line from sewer pipe and flue linings to vitrified pipe and fire brick. The compact pocket-size booklet includes net prices on all types of clay products. For clarification, all types, sizes and shapes are shown by illustration. Full of interesting tables, it is available from **Universal Sewer Pipe Corp., Cleveland, Ohio.**

FLEXSEAL—Information about this new silicone-base water repellent, applicable to sandstone, limestone, stucco and other similar compositions, as well as to brick and concrete surfaces, is listed in a new 4-p two-color bulletin. Technical data and application instructions for the Flexseal are included.—**Building Products Div., Flexrock Co., 36th & Filbert Sts., Philadelphia 4, Pa.**

PIPE TOOLS—Users of pipe tools are offered pertinent information in this catalog and data book. Descriptions of Models A, B and E pipe and bolt machines, power units, ratchet threaders, reamer cutters and other tools are accompanied by pen and ink drawings and technical copy telling how to locate and correct pipe tool troubles.—**Beaver Pipe Tools, Inc., Dana Ave., Warren, Ohio.**

FLOORS WITHOUT FLAWS—Efficient conditioning and maintenance of floors in large institutional and office buildings is outlined in this 12-p guide by A. C. Horn Co., Inc. The right product for various types of floors—asphalt, tile, concrete, cork, linoleum, magnesite, terrazzo and wood, as well as application directions, are presented in the 3-color brochure from **A. C. Horn Co., Inc., Tenth St. & 44th Ave., Long Island City, N. Y.**

Riggers PLAY IT SAFE on "high wire" jobs!

... that's why they demand GENUINE

CROSBY CLIPS

Drop-forged, hot-dip galvanized wire rope fasteners
SIZES FOR ⅛" TO 3" WIRE ROPE
DISTRIBUTORS EVERYWHERE

AMERICAN HOIST & DERRICK CO.
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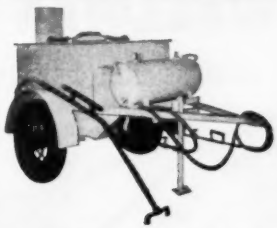

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FOR ASPHALT AND TAR
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Portable — Stationary
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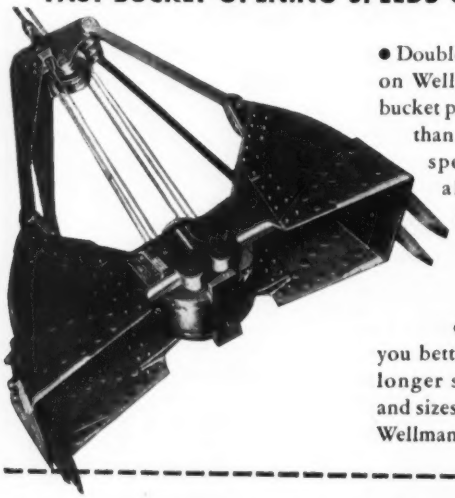
ELKHART 6 INDIANA

First Choice
SUPREME IN THE FIELD
• ASSURES unmatched self-priming speed—the result of exclusive CMC dual jet construction.
• Non-clogging, open thrash impeller handles solids up to ¾ intake size.
• Available in sizes from 1½" to 10"—capacities from 3,000 to 200,000 gal. per hr.
CMC equipment is sold and serviced by leading equipment distributors everywhere.
DUAL PRIME PUMPS
CONSTRUCTION MACHINERY CO'S.
WATERLOO, IOWA, U.S.A.
MIXERS-HOISTS-RADIAL SAWS-CARTS

WELLMAN *Williams Type*

FAST BUCKET OPENING SPEEDS OPERATIONS



• Double-hinge construction on Wellman's multiple-rope bucket permits faster opening than a single hinge. This speeds up operations, also gives a bigger spread in the open bucket for the same headroom.

Wellman's welded-design buckets offer you better performance and longer service. In all types and sizes you'll do better with Wellman!

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THE WELLMAN ENGINEERING COMPANY
7000 Central Avenue
Cleveland 4, Ohio

OIL BURNERS—In a two-color, 8-p catalog, this manufacturer of equipment for generation and utilization of heat describes the full line of Hev-E-Oil burners which handle any fuel oil not requiring heating during storage and pumping to the burner. Described and illustrated are the two basic models of Hev-E-Oil burners, as well as specifications of all the manufacturer's models. The back cover lists 14 specific features incorporated in the burners.—**Cleaver-Brooks Co., 326 E. Keefe Ave., Milwaukee 12, Wis.**

CEMENT TESTING EQUIPMENT—Designed to provide accurate determination in maintaining standards of quality of concrete, asphalt and bituminous materials is the precision-built equipment illustrated in this 6-p bulletin. Descriptions of the Cenco-Menzel autoclave for testing cement soundness, entrained-air indicator, ductility tester for bituminous material, viscosimeter and pentrometers are included in circular 1212, **Central Scientific Co., 1700 Irving Park Rd, Chicago 13, Ill.**

WHAT'S A SILICONE—Dow Corning's new 32-p booklet answers this oft-asked question in terms of what silicone does. The widely varied uses of silicone products are listed and further emphasized by illustrations and graphs. — **Dow Corning Corp., Midland, Mich.**

BEAUTIFUL WOODS FOR BEAUTIFUL HOMES — In full color, this 19-p brochure contains ideas and illustrations for do-it yourself installations of weldwood hardwood plywood, flush doors, striated weldtex and plankweld—the wood paneled room that comes in a package. The publication also tells the story of the making of Weldwood and includes a question and answer section about the use of the product.—**U. S. Plywood Corp., 55 W 44th St., New York 18, N. Y.**

REFERENCE MANUAL—Listing of 800 building materials and industrial products obtained from asbestos, asphalt and magnesia is contained in this new manual by the Philip Carey Co. The book shows army, navy, federal, ASTM and other specifications, along with their corresponding product. All information is cross-indexed for easy reference. — **Philip Carey Mfg. Co., Dept. FRM, Cincinnati 15, Ohio**

FANS AND BLOWERS — Specifications, dimensions, installation diagrams and product photographs of 30 fan types in over 300 sizes are described in this 30-p catalog printed in two colors. A price list and engineering bulletin, as well as extensive information on selection and installation of fans for every use, are included.—**Chelsea Fan & Blower Co., Inc., Plainfield, N. Y.**

ELEVATOR SILLS—The Alexander sill, which operates like a drawbridge, fills the gap between elevator and building floors, providing a safe, smooth surface for trucks entering or leaving the elevator. Description of operation and appearance of five models of elevator door sills is offered in this illustrated circular.—**Alexander Sill Co., 970 Milwaukee Ave., Chicago 22, Ill.**

REFRACTORY PRODUCTS — Use and application of monolithic refractory constructions for municipal incinerators are listed in this 16-pager printed in two colors. The construction of arches and charging holes in chambers, flues and stacks is covered in detail as is the installation service for repairing, remodeling and new installation.—**Plibrico Jointless Firebrick Co., 1800 Kingsbury St., Chicago, Ill.**

EXIT AND DIRECTIONAL LIGHTING—Thirty-one distinct types of signs, attractively illustrated and printed in two colors, are featured in this 8-p catalog supplement. General specifications for edgelites, surface-mounted units, surface-mounted exit signs, recessed exit signs and molded-glass directional globes are listed, in addition to specific information regarding face, letter height, over-all lengths and height and fixture width.—**Gruber Bros., Inc., 125 S. First St., Brooklyn 11, N. Y.**

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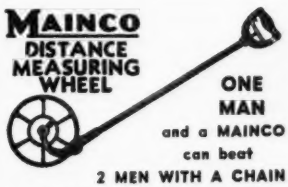
MAINCO
DISTANCE MEASURING WHEEL



ONE MAN and a MAINCO can beat 2 MEN WITH A CHAIN

Send for descriptive folder today
THE MAINTENANCE CO., INC.
Dept. B, 453 W. 42nd St., New York 36, N.Y.

STOP *that* WATER
WITH FORMULA NO. 640. A clear liquid which penetrates 1" or more into concrete, brick, stucco, etc., seals—holds 1250 lbs. per sq. ft. hydrostatic pressure. Cuts costs: Applies quickly—no mixing—no cleanup—no furring—no membranes. Write for technical data—free sample.
Haynes Products Co., Omaha, Neb.

New Advertisements
received by June 23rd will appear in the July issue subject to limitations of space available.
Classified Advertising Division
CONSTRUCTION METHODS
330 W. 42nd St., New York 36, N. Y.

Johns-Manville Industrial Friction Materials are specified by most leading manufacturers of earth moving equipment

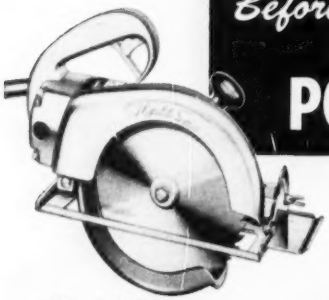
When it's time to replace clutch and brake friction materials on your own machines, here is something worth considering.

Manufacturers with a vital interest in the performance of their equipment prefer J-M Industrial Friction Materials! Time and again they have set records for endurance and low-cost operation. Whether in block, lining, facing or cone form, J-M Friction products are engineered for the job—formulated for maximum service life and top performance. Rigid manufacturing and inspection controls insure uniform high quality and reliability.

Be sure that your equipment will continue to give the excellent service the manufacturer originally built into it. Take a tip from the machine makers. Replace with genuine Johns-Manville Friction Materials.

Write for your copy of "Johns-Manville Industrial Friction Materials" FM-12A. It contains a wealth of important application and performance data. Address: Johns-Manville, Box 60, New York 16, New York.

Johns-Manville
INDUSTRIAL FRICTION MATERIALS
No. 1 With Leading Manufacturers



Before You Buy Any
PORTABLE
POWER SAW

Check For All These Features
To Make Your Work
EASIER, FASTER
More ACCURATE...

Model 86
MALLSAW Gives You
All These Performance
Advantages:

- Easy to Use in Either Hand
- Handy on Ladders, Scaffolds, Roofs
- Readily Adapts to Cut Any Materials
- Powered by Heavy-Duty, Universal Motor

Expect years of dependable, trouble-free service from a Model 86 MALLSAW . . . a light-weight but powerful tool that speeds any sawing job. Supplied with 8½" dia. combination blade, cord, lubricant, wrench — all in handy metal carrying case. Extra blades available for dadoing; grooving tile, concrete; cutting light metals. Choose and use this handy MALLSAW — a quality tool, through and through!

See Your Nearest MALL Dealer — Or Mail Coupon for Latest Catalog.

Mall
TOOL COMPANY
7704 S. Chicago Avenue
Chicago 19, Illinois

Clip and mail this CHECK LIST for details

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ABP ABC

Member of Associated Business Publications and Audit Bureau of Circulations

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Their performance proves their pedigree!

You'll like the way International Trucks *prove* they're the thoroughbreds of the heavy-duty class.

They prove it by the way they withstand the high degree of twisting and shock so common on jobs where dirt, rock and heavy construction materials must be hauled. They prove it by cutting costs, being easier to handle, lasting longer.

International Trucks have *all* this and a lot more. See your International Truck Dealer or Branch for the truck engineered to cost less on your jobs.

INTERNATIONAL HARVESTER COMPANY · CHICAGO

You can't beat these International Truck exclusives:

- All-truck engines—exclusively for truck work—built in the world's largest truck engine plant.
- The "roomiest, most comfortable cab on the road"—the Comfo-Vision Cab designed by drivers for drivers.
- Super-steering system—more positive control, easier handling, 37° turning angle for greater maneuverability.
- Traditional truck toughness that has kept International first in heavy-duty truck sales for 20 straight years.
- 115 basic models . . . everything from ½-ton pickups to 90,000 lbs. GVW off-highway models.
- America's largest exclusive truck service organization.

International Harvester Builds McCormick Farm Equipment and Farmall Tractors . . . Motor Trucks . . . Industrial Power . . . Refrigerators and Freezers

INTERNATIONAL TRUCKS

"Standard of the Highway"

International six-wheel models are available in GVW ratings from 22,000 to 70,000 lbs.

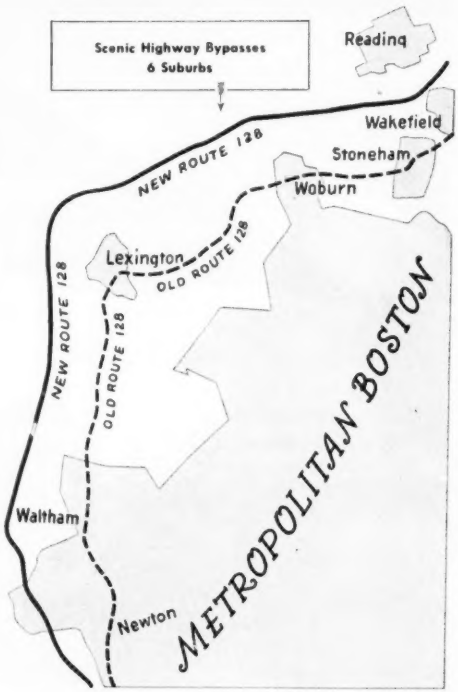
New Bypass Helps Untie Boston Area Traffic Knots

Until recently motorists trying to avoid downtown Boston's heavy traffic had to wind along old Route 128, a tortuous, 70-minute trek through six suburbs.

Using the new, 22-mile Northern Circumferential Highway, drivers can now rim the Hub in 30 minutes. More than a million cars a month travel this limited-access road, termed "the most needed expressway in all New England." The highway connects the Worcester Turnpike with the Newburyport Pike, and it will be part of an expressway from the Connecticut border to the New Hampshire line.

Flanked by paved shoulders, the two 24-foot roadways have a grassy median strip 20 feet wide. Another safety measure is the design, which permits a free flow of traffic on and off the highway. Forty-five bridges eliminate intersections and traffic lights. The State of Massachusetts maintains two patrol trucks to service automobiles in trouble.

Seven contractors completed the $18 million job. Bethlehem furnished structural steel, reinforcing steel, bar mats, dowel units and guard rails.



BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

STEEL FOR HIGHWAYS

Dowel Units • Reinforcing Bars • Bar Mats • Guard Rail • Guard Rail Posts • Wire Rope and Strand Pipe • Hollow Drill Steel • Spikes • Bolts and Nuts • Timber Bridge Hardware • Tie-Rods Sheet- and H-Piling • Fabricated Structural Steel

BETHLEHEM STEEL

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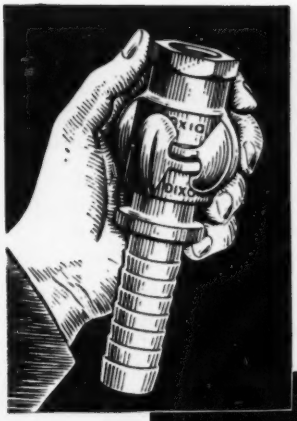
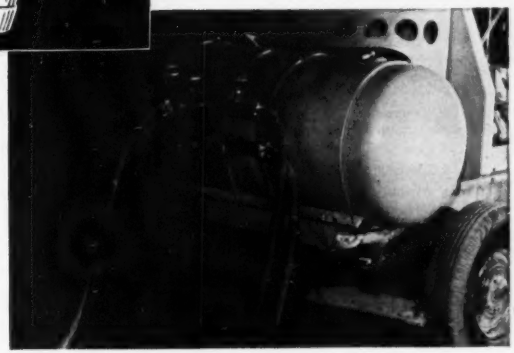


THIS *Versatile Coupling*

while used primarily for air-operated tools in field and factory, is equally efficient for water, oil and spray service. Illustration shows hose end and female I.P.T. end connected.



"AIR KING" *Quick-Acting Universal* HOSE COUPLING

The "AIR KING" will reduce operating costs on every job requiring quick connection. Heads are locked by simply pressing together and giving one a quarter-turn. These locking heads are identical for all sizes of hose or threaded ends, permitting the coupling of any two sizes of hose, or hose and pipe, within the "AIR KING" size range. Equipped with patented safety locking device. Available in bronze or rustproofed malleable iron, in sizes up to 1".

Two Hose Ends Connected

Male I.P.T. End

Stocked by Manufacturers and Distributors of Industrial Rubber Products

DIXON *Valve & Coupling Co.*

GENERAL OFFICES & FACTORY—PHILADELPHIA 22, PA. BRANCHES—CHICAGO
BIRMINGHAM • LOS ANGELES • HOUSTON • DIXON VALVE & COUPLING CO. LTD., TORONTO
ASSOCIATE COMPANIES—DIXON IRON COMPANY, INC., QUAKERTOWN, PA. • PRESTON DRAWN STEEL COMPANY, CAMDEN, N.J.

SEARCHLIGHT SECTION

(Classified Advertising)

EMPLOYMENT: BUSINESS: "OPPORTUNITIES" :EQUIPMENT :USED OR RESALE

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Equipment Wanted or For Sale Advertisements acceptable only in Displayed Style.

Individual Spaces with border rules for prominent display of advertisement.

The advertising rate is $13.20 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

An advertising inch is measured ⅞" vertically on one column, 3 columns—30 inches—to a page.

New Advertisements Address New York office, 330 W. 42 St., N.Y. 36, N.Y. for July Issue closing June 23rd.

FOLLOWING EQUIPMENT FOR SALE

1—D8 Caterpillar Tractor, Serial No. 1H9970 with Caterpillar Winch and Model LeTourneau FP Scraper

1—D8 Caterpillar Tractor, Serial No. 1H9973 with Caterpillar Winch and Model LeTourneau FP Scraper

1—D8 Caterpillar Tractor, Serial No. 1H9975 with Caterpillar Winch and Model LeTourneau FP Scraper

1—D8 Caterpillar Tractor, Serial No. 8R20 with Caterpillar Winch and Model LeTourneau FP Scraper

1—D8 Caterpillar Tractor, Serial No. 8R28 with Caterpillar Pusher Block

1—D8 Caterpillar Tractor, Serial No. 8R27 with Caterpillar Pusher Block

These tractors are in very good condition, most of them have recently had rails and rollers, sprockets and idlers put on and are now working.

3—No. 12 Caterpillar Graders, Serial Nos. 9K4660, 9K4666, 9K4638

These Graders are in excellent condition

If interested wire, write or call

CENTRAL ENGINEERING & CONTRACTING CORPORATION
Durham, N. C.

REPLIES (Box No.):
Address to office nearest you
NEW YORK: 330 W. 42 St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

CHIEF ENGINEER required by Heavy Construction Company with Head Office Montreal. Candidates must be qualified Engineers with long successful experience in major civil engineering works with leading Canadian or U.S. Contractors. Able to take full control of contracts estimate to final account. Experience on marine works an advantage. Reply P-4255, Construction Methods & Equip.

EXPERIENCED ENGINEER thoroughly familiar with all phases of road, bridge, airports and water mains & drainage contracting work. Must be able to take complete charge of all work in progress supervise men, allocate and have equipment in top working order, if you can lay-out work and are willing to take the responsibilities of the above requirements the salary is open to you. Only those that meet these requirements need apply all replies in strictest confidence. Permanent work. Phone, between 7 & 8 pm, or write Joseph Bonavita, 60 Aouchnet Avenue, Springfield, Mass.

GENERAL SUPERINTENDENT—Marine and Heavy Construction. Permanent position. Location Southern New England. P-3962, Construction Methods & Equip.

"FASTER FROM FOSTER"

RAILS NEW AND RELAYING

RENTAL PILING STEEL SHEET

• Five complete warehouse stocks assure you of the exact requirements for all your job needs. Largest stocks in U.S. of Relaying Rails and Rental Steel Sheet Piling. Also complete Track Accessories. Pile Hammers and Extractors for rent. Write for Catalogs.

TRACK ACCESSORIES • PIPE • WIRE ROPE

L.B. FOSTER CO.

Pittsburgh 30, Pa. New York 7, N. Y.
Chicago 4, Illinois Houston 2, Texas

CONSTRUCTION MANAGEMENT
Superintendents and Project Managers Training Course.

All instruction by mail. Send today for sample lesson and complete details.

GEO. E. DEATHERAGE & SON
5 E. Preston St. Baltimore 2, Maryland

Byers 83 Hoe Crane Shovel 1948 $12,500
T9 Dozer 1950 4,900
HD5G Tractor Shovel 6,500

Prescott 9-4143
E. RUTHERFORD, N. J.

"BARGAIN FOR CASH"

Three Model "C" Tournapulls; all equipped with LeTourneau "L5" Scrapers. Tractor Units all have 21.00x24 tires, and rubber on both tractors and scrapers in very good condition.

One Model "C" Tournapull, equipped with "Tournatrailer."

All tractor units have "Caterpillar" Diesel Engines. All equipment in running order.

HOBSON AND COMPANY
"Caterpillar Distributor"
2131 Washington St.
Kansas City, Mo. Ph: Harrison 6615

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For Sale 200
Piling 200
Pipe 200
Rail 200

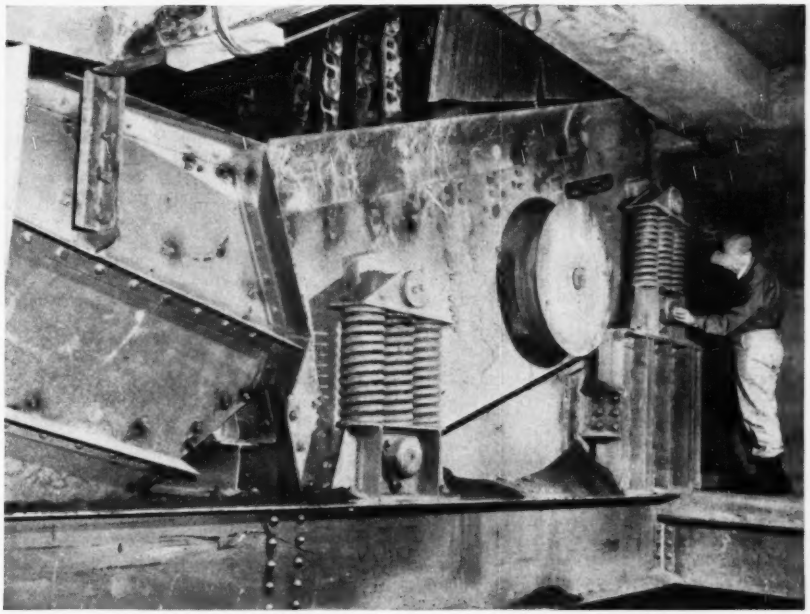
CONSTRUCTION
Methods and Equipment

E. E. WEYENETH, *Advertising Sales Manager* — HOWARD T. OLSEN, *Assistant Manager*

J. G. JOHNSON, *Business Manager*

Sales Representatives: H. T. Buchanan, 330 W. 42nd St., *New York;* F. G. Hudson, Knox Bourne and G. A. Mack, 520 N. Michigan Ave., *Chicago;* R. E. Dorland, 68 Post Street, *San Francisco;* W. C. Bradford, 1510 Hanna Bldg., *Cleveland;* W. E. Donnell, Continental Bldg., *St. Louis;* H. L. Keeler, 1111 Wilshire Blvd., *Los Angeles;* R. C. Maultsby, 1321 Rhodes-Haverty Bldg., *Atlanta;* James Cash, First National Bank Bldg., *Dallas.* Other Sales Offices: Architects Bldg., 17th and Sansom Sts., *Philadelphia;* 738 Oliver Bldg., Pittsburgh; 856 Penobscot Bldg., *Detroit;* 1427 Statler Bldg., *Boston;* 95 Farringdon St., *London,* E.C. 4.

HEWITT-ROBINS



Impervious material for the dam core is first scalped on this 6' x 14' Hewitt-Robins Heavy-Duty Scalper equipped with 12" x 15" openings in the steel deck.

Hewitt-Robins System Processes 7 Million Yards of Material for Huge Earth-Filled Dam

To maintain a fast, continuous flow of this mountain of material at the lowest cost per yard, the contractors of a huge Eastern dam project are using a unique materials processing system designed by Hewitt-Robins.

This system, consisting of Hewitt-Robins Heavy-Duty Scalpers, Belt and Pan Conveyors, is divided into two self-contained processing plants. One plant is handling approximately 2 million yards of impervious earth for the dam core . . . the other is processing some 5 million yards of pervious material. These plants are designed to operate at the rate of 1300 cubic yards and 2600 cubic yards per hour respectively and to operate 20 hours a day, 5 days per week.

Here is just one more example of how Hewitt-Robins bulk materials processing and handling systems are meeting schedules and cutting costs for contractors everywhere.

Learn how a Hewitt-Robins system may provide a more efficient—more dependable—more economical answer to your bulk materials handling and processing operations. Let us show you facts and figures. Send us details of any project you now have or intend to bid on. Include topographical maps. Write Contractors' Service Department, Robins Conveyors Division.

HEWITT-ROBINS HR **INCORPORATED**
STAMFORD, CONNECTICUT

Hewitt Rubber Division • Robins Conveyors Division • Robins Engineers Division • Hewitt Restfoam® Division

Methods Memo . . .

BE SURE TO GET A COPY of the annual Equipment Maintenance Directory of CONSTRUCTION METHODS AND EQUIPMENT. It will be published next month and will feature a listing of manuals available on the operation, maintenance and repair of construction equipment. Manufacturers spend large sums of money preparing instructions on the use and care of their machines and they are anxious that operators of their products get the dope they need. Our July Directory issue will list what is available and will show the owner how to ask for what he needs.

FLOODS ARE BIG NEWS and a whole nation gets excited about them when they are rampaging down some big stream such as the Missouri River. CM&E last month carried a dramatic picture story of contractors applying their equipment and ingenuity in hurry-up fashion to head off disaster at Omaha (May, page 50). Not so spectacular, but just as dramatic, was the race against time made by the Paul Crawley Contracting Co., Cambridge City, Ind., to beat spring high-water levels along the Missouri in St. Charles and St. Louis counties last winter. The work involved rebuilding some 37 mi of earth levees and the moving of nearly 800,000 yd of earth. Operations went on six days a week—often during extremely bad weather. Construction men worked another miracle with their big crawlers, dozers and scrapers under tough conditions.

COMMUNIST COPIERS make the news again. Two Russian track-type tractors, captured in Korea, are being evaluated by the Corps of Engineers. The crawlers bear a close resemblance to the Army's Caterpillar D-7's. Specifically, the fuel injection system, air cleaner and starting engine have been copied. Russian machines are being studied to determine the possibility of restoring captured equipment by replacing worn and damaged Soviet parts with American parts.

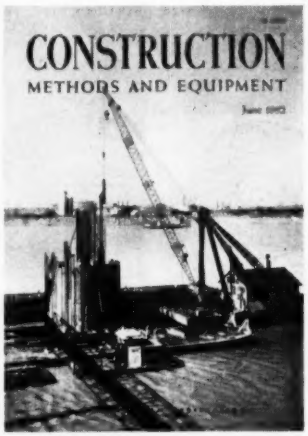
GO SOUTH, YOUNG MAN, was the decision of William G. Kastner of Madison, Wis., last winter, to keep his big earthmover earning money. Last summer, Bill and his brother Robert pooled their assets and purchased a new D. Roadster Tournapull scraper. Things went well until cold weather shut down earthmoving operations in Wisconsin. Bank payments had to be met and partnership funds were low. They made a decision: Bill rigged a makeshift windshield on the Roadster, dressed warmly and headed south over the highways. On the sixth day he arrived in Arlington, Tex., 1,050 mi away, and told the local LeTourneau distributor that he and his rig were ready to go to work. He got an earthmoving job right away. American initiative still pays off.

BIG BIZ: We always knew contracting was mighty big business, but still the 1951 annual report of Morrison-Knudsen Co., Inc., gave us a jolt. Parent and subsidiary companies completed contracts totaling $312,400,000 during the year; carried into 1952 a volume of $361,400,000. The parent company alone did a volume of $230,500,000 last year; paid $6,666,000 for equipment; carried equipment costing $22.3 millions on the books at a depreciated value of $11,300,000. And for those who think contracting is ever a lush business—net after taxes was a magnificent 2.2%.

"VIBRATORY EXPLOSIVES" CURE SICK WELLS, according to a report given at the spring meeting of the American Society of Mechanical Engineers by Harvey A. Mylander, a water engineer in California. A string of small explosive charges is spaced carefully in the well casing, and the charges detonated singly at calculated intervals to produce vibration or continuous shock waves powerful enough to dislodge clogging obstructions and clean out well perforations to permit a greater flow of water. Heavy blasts are avoided, to prevent casing damage.

IF SOMEONE HAD TAKEN THE TROUBLE to block up the raised body of a dump truck in the shop, Neal Moore, partner in the contracting firm of Moore & Moore, La Porte, Tex., would be alive today. He was inspecting a truck under repair, when suddenly the body dropped, crushing him against the truck frame. These tragic accidents happen every day, yet they are so easily avoided by a little simple forethought and safety consciousness.

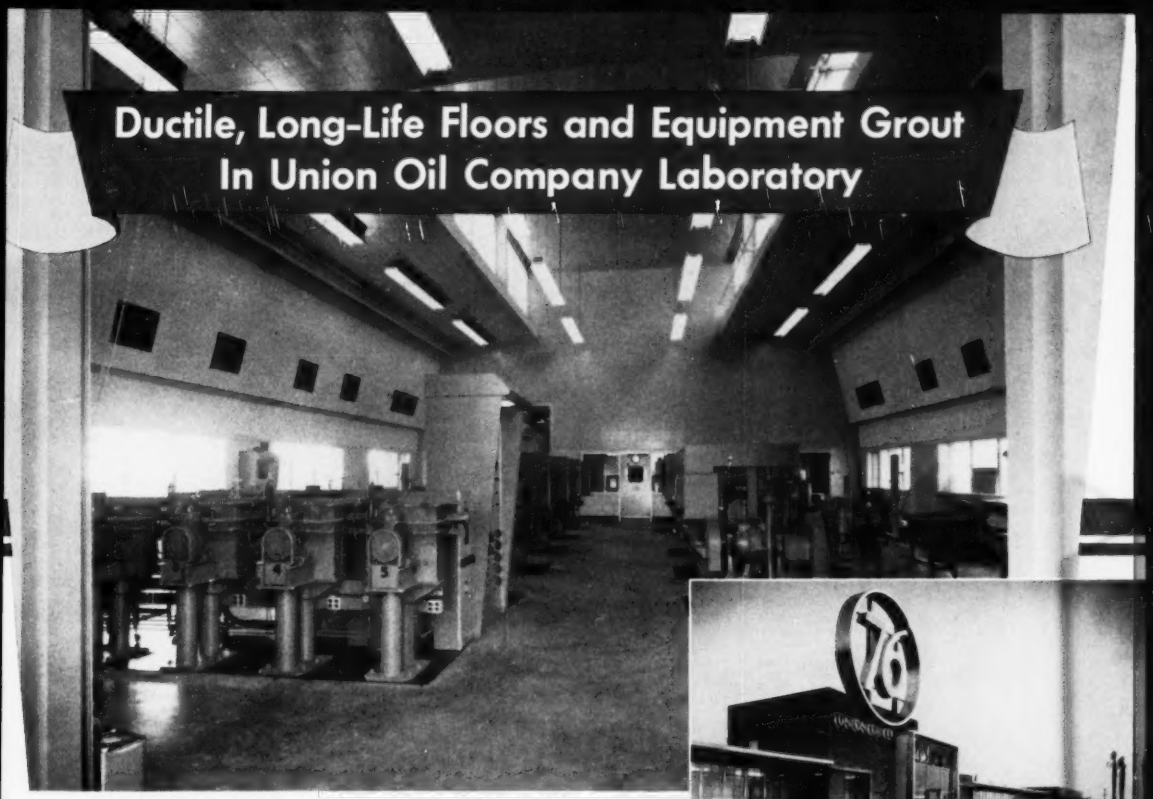
A HOME OWNER'S SERVICE POLICY is being issued to buyers of new houses built by members of the National Association of Home Builders. It is patterned after the standard new automobile policy issued with each car and is a commendable step to prove to the new owner what he is getting and to guide those who have only a hazy notion of their responsibilities as home owners. Also, it resists the encroachment of the jerry builder and the opportunist type of in-and-outer who are interested chiefly in "making a fast buck."



On the Cover . . .

Across the Mississippi from St. Louis, at Venice, Ill., this 30-ft dia steel cell is driven by Vollmar Bros. Construction Co., St. Louis, for Union Electric Power Co. as a permanent central pier for a new coal unloading dock to serve Union's power plant. Carnegie MP-112 steel sheeting is being driven to 30-ft penetration by a McKiernan-Terry 9-B-3 hammer handled by an 18-ton American Hoist derrick from a Dravo-built barge. The cell will be sealed with 4 ft of tremie concrete, filled with sand and rock, and capped with concrete to support a remote-controlled American 3-drum stiffleg derrick. The derrick will handle a 3½-yd clamshell for unloading coal barges into a conveyor leading to the plant. Synchronized barge pullers, each equipped with 1,000 ft of Leschen galvanized wire rope, will shift the barges for unloading. Final clean-up in the barges will be by airborne-type bulldozers. Thomas E. Harmon is superintendent for Vollmar Bros.; James E. Dumphy represents the owner. This swell picture was taken by that professional amateur, Joseph E. Vollmar, Jr., president of Vollmar Bros.

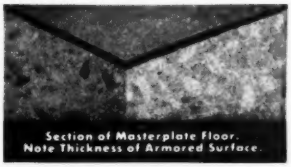
Ductile, Long-Life Floors and Equipment Grout In Union Oil Company Laboratory



Union Oil Co. Laboratory, Brea, California. Archt.—Austin, Field and Fry; Contr.—P. J. Walker Co.; Cement Contr.—R. J. Hiller Co.—all companies of Los Angeles, California. Masterplate "Iron-Clad" Concrete Floors—non-colored and colored. Equipment grouted with Embeco Non-Shrink Mortar.

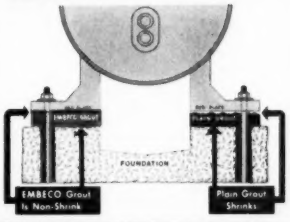
CEMENT DISPERSION IS KEY TO SUPERIORITY OF THESE MASTER BUILDERS PRODUCTS

MASTERPLATE . . .



Section of Masterplate Floor. Note Thickness of Armored Surface.

EMBECO . . .



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